

UTAH INSECTS

THE LIBRARY OF THE

JUL 19 1944

UNIVERSITY OF ILLINOIS



Corn Earworm Moth

Contribution from
The Department of Entomology
Utah Agricultural Experiment Station
Logan, Utah

INSECTS OF UTAH 1/

Insect damage to crops, livestock, household furniture, forests, shade trees and ornamentals, stored products and to man himself extorts a heavy toll from the people of Utah each year. Were it not for the aid received from large numbers of parasitic and predacious insects, insectivorous birds, reptiles and mammals, which feed upon and destroy a high percentage of many of the pest forms, insect control would present a much more difficult and perplexing problem.

The following report is intended to add to our knowledge of the insect species found in Utah, their distribution and seasonal occurrence. In many cases notes are added concerning the nature or extent of injury caused by pest species, or the benefit resulting from the activity of beneficial species.

Part I - 2/

G. F. Knowlton and F. C. Harnston 3/

Order: DERMAPTERA - Earwigs

Forficula auricularia L. The European earwig has been found to occur in Utah in large numbers at Farmington, where it evidently has caused household annoyance and injury to crops for at least eight years, according to reports of farmers. Large infestations were found at Farmington, July 2, 1938 (W.W. Henderson-Knowlton). 4/ This species also has been collected at Holladay in 1937 (Knowlton-C.F. Smith) and in 1938 (W.E. Peay). Specimens of native species have rarely been encountered in Utah.

Order ISOPTERA - Termites

Reticulitermes tibialis Bks. Brigham, May 13, 1933; Ft. Duchesne (F.K. Stoffers); Lampo; Skull Valley; Snowville.

R. tuniceps Bks. Ogden, August, 1937 (Knowlton).

Serious damage to floors and other wooden parts of buildings occurs in Utah due to termite injury, although this is less general than in many other parts of the United States.

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- 1/ Unless otherwise specifically indicated, material was collected in Utah by the writer or writers. K.= G.F.Knowlton; H.= F.C.Harnston. Nearly all records refer to the collection of adult specimens.
 - 2/ The writers wish to express their appreciation for the aid received from Mr. C.F.W. Muesebeck and his staff of workers in the Division of Insect Identification, U. S. Bureau of Entomology and Plant Quarantine; to Dr. E.A. Chapin of the U. S. National Museum, and to the various specialists who have aided with identifications. Those who particularly aided with identifications recorded in this section are Messrs: A.B. Gurney, T.H. Frison, H.H. Ross, J.H. McDunnough, A.N. Caudell, T.E. Snyder. The typing of manuscript and cutting of stencils for INSECTS OF UTAH were provided through a federal N.Y.A. resident training project.
 - 3/ Research associate professor and research assistant, respectively.
 - 4/ The presence of earwigs at Farmington was called to the attention of the writers on June 30, 1938 by J.H. Blazzard, then County Agricultural Agent for Davis County.

Order EPEMERIDA - May Flies

- Uphomerella inermis Eaton. Logan, June 20, 1936 (R. C. Roskelley); Providence.
Rithrogena futillis McD. Provo Canyon, April 27, 1933 (K.).
Siphylurus occidentalis Eaton. Logan, June 27, 1933 (T. O. Thatcher).
Thraululus albertanus McD. Moab, August 27, 1935 (C. J. Sorenson).

Order ODONATA
Family LIBELLULIDAE

- Sympetrum costiferum Hagen. Apparently preying on adult beet leafhopper, Eutettix tenellus (Baker), at Lampo during the fall of 1930 (Knowlton). (Det. Dr. C. H. Kennedy).

Order NEUROPTERA
Family RAPHIDIIDAE
Family

- Agulla adnixa (Hagen). Brigham, June 14, 1933; Farmington (E. W. Anthon); Ft. Duchesne (Harmston); Logan (T. O. Thatcher); Paradise (O. S. Lee); Provo; Roosevelt; Sardine Canyon.
A. bicolor (Alb.). Farmington, June 14, 1935 (F. H. Gunnell); Logan; Monticello; Mt. Carmel; Vernal; Zions National Park (C. J. Sorenson).
A. oblita Hagen. Logan, July 24, 1930 (K.-M. J. Janes); Park City; Snyderville.
A. unicolor (Carp.). Amalga, May 2, 1937 (H. J. Pack); Farmington; Ft. Duchesne (F. K. Stoffers); Smithfield.

Family MANTISPIDAE - Mantispids

- Climaciella brunnea Banks. Bountiful, July 17, 1939 (H. J. Pack); Currant Creek; Farmington; Fruitland; Logan (R. E. Nye); Millville, September (K.); North Ogden (L. W. Gibson); Roosevelt; Uinta Canyon.
Symphasis signata Hagen. Duchesne, June 23, 1935; Red Creek.
Symphasis signata Hagen

Family POLYSTOECHOTIDAE - Large Lacewings

- Polystoechotes punctatus (Fabr.). Ft. Duchesne, September 5, 1932 (F. K. Stoffers); Logan (J. A. Meacham); Millville; Ogden; River Heights; Roosevelt.

Family HEMEROBIIDAE - Brown Lacewings

- Boriomyia transversus Banks. Logan, July 16, 1933 (T. O. Thatcher).
Herobius moestus Bks. Logan, August 14, 1937; Salem; Wolf Creek Pass.
H. pacificus Bks. Logan, July 25, 1933 (T. O. Thatcher); Millville; Monticello; Virgin (C. J. Sorenson).
Megalomus latus Bks. Logan, July 2, 1937; Manti.
M. moestus Bks. Logan, June 26, 1937 (K.-Smith).
Micromus montanus Hagen. Logan, September 4, 1937.
M. variolosus Hagen. Alton, June 27, 1933; Duchesne; Ft. Duchesne; Garland; Granite; Logan; Promontory; Salt Lake City; Spanish Fork.

Family SYMPHEROBIIDAE - Sympherobid Brown Lacewings

- Symphorobius perparvus (McLachlan). Kamas, June 24, 1936; Logan; Trout Creek.

Family MYRELEONIDAE - Ant Lions

- Clathroneuria schwarzi (Currie). Moab, September 4, 1937.

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Order COLEOPTERA
Family LAMELLIPEDAE

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- Hesperoleon abdominalis Say. Draper, June 20, 1931 (W.L.Thomas); Ft. Duchesne (F.K.Stoffers); Garfield; Grantsville; Harrisville; Hurricane; Logan; Low; Monument; Ogden; Roosevelt; Salem; Saratoga.
- H. blandus (Hagen). Monument, June 19, 1930; Showell, Box Elder County.
- H. brunneus (Currie). Trout Creek, July 25, 1933 (H.B.Stafford).
- H. carrizonus (Hagen). Trout Creek, July 25, 1933 (Stafford).
- H. coquilotti (Currie). Trout Creek, July 25, 1933 (Stafford).
- H. ferox (Walker). Trout Creek, July 25, 1933 (Stafford);
- H. nigrilabris (Hagen). Duchesne, August 17, 1935; Elberta; Ft. Duchesne; Logan; Oak Creek Canyon (L.Jeppson); Redmond; Richmond.
- H. sackoni (Hagen). Stansbury Island, July 3, 1913 (H.J.Pack).
- H. toxanus (Bks.). Moab, September 4, 1937.
- Myrmoleon immaculatus DeGeor. Farmington, August 5, 1937 (H.E.Dorst); Logan, July 27, 1931 (W.L.Thomas).
- Paranthaclisis congener (Hagen). Oak Creek, July 22, 1937 (L.Jeppson); Trout Creek (Stafford).

Family ASCALAPHIDAE - Ascalaphids

- Ululodes albifrons (Banks). Timpie, August 28, 1931 (K.-Thomas).

Family CHRYSOPIDAE - Green Lacewings

- Chrysopa arizonensis Bks. Logan, August 25, 1937 (K.-Stanford).
- C. californica Coq. Murray, July 8, 1932; Promontory; Roy; Springville; Thatcher; Timpie; West Point.
- C. cockerelli Bks. Logan, July 29, 1937; Oak Creek Canyon (L.Jeppson).
- C. coloradensis Bks. Amalga, August 9, 1937; Dolomite; Duchesne; Huntsville; Logan; Manila; Oak Creek Canyon; Roosevelt; Skull Valley; Trout Creek (Stafford).
- C. furcata Bks. Logan, August 25, 1937 (K.-Ted Stanford).
- C. harrisii Fitch. American Fork, July 9, 1930; Hopper; Millville; Penrose.
- C. harrisii var. externa Hagen, Corinne, September 9, 1925; Elsinore; Ft. Duchesne (Stoffers); Hyde Park; Logan; Magna.
- C. nigricornis Bks. Logan, August 14, 1937.
- C. majuscula Bks. Logan, June 24, 1933 (L.Green); Oak Creek (Jeppson); Pleasant Grove; River Heights; Salt Lake City; Spanish Fork; Springville; St. George.
- C. oculata Say. Ft. Duchesne; Lehi, June 3, 1937; Logan; Mendon; Moab; Oak Creek Canyon; Providence; Riverdale; Salina Canyon; Springville; Trenton.
- C. oculata var. bipunctata Fitch. Fielding, August 17, 1932.
- C. oculata var. carei Smith. Magna, June 21, 1930; Providence.
- C. oculata var. illepida Fitch. Logan, June 8, 1931 (W.L. Thomas).
- C. oculata var. separata Bks. Amalga, June 29, 1937; Nephi; Oak Creek Canyon (Jeppson); Smithfield.
- C. oculata var. xanthocephala Fitch. Farmington, June (Anthon); Logan.
- C. plorabunda Fitch. Brigham Canyon, June 24, 1937; Fisher's Pass (K.-M.J. Janes); Ft. Duchesne; Green River; Moab; Pleasant Grove; St. George. Widely distributed in Utah.
- Chrysopiella pallida Bks. Kelton, June 9, 1930; Orr's Ranch.
- Eremochrysa fraterna (Bks.). Elberta, July 22, 1932; Grouse Creek; Logan; Monarch; Richfield; Roosevelt; Spanish Fork; Trout Creek; Valley City Junction.
- E. hageni Bks. Logan, July 6, 1937.
- E. punctinervis M'Lachlan. Bluff, September 5, 1937; Lucin; Trout Creek.
- Meleoma emuncta (Fitch). Logan, August 31, 1937.

Biological Control Notes:-

In connection with studies made of biological factors involved on control of the pea aphid in Utah,^{5/} observations were made on the feeding habits of several species of Chrysopidae larvae and adults. Chrysopa oculata separata Bks., was observed to be the most abundant species occurring in Utah pea fields during 1937 and 1938. Larvae of this species in the insectary fed voraciously upon pea aphids and on several occasions as many as eight fourth instar or mature specimens were consecutively attacked and their body fluids devoured by one of these predators. Adult lacewing flies were also found to devour large numbers of pea aphids under cage conditions. It appeared that benefit resulted from the feeding of these insects upon the pea aphid, both adults and larvae often being encountered in considerable abundance during early summer in most Utah pea fields.

Order CORRODENTIA - Book Lice, Bark Lice.

Psocus bisignatus Bks. Riverdale, Idaho, July 7, 1938 (Knowlton)
P. confraternus Bks. Logan, at light, June 29, 1938 (K.-Hardy).
P. striatus Walk. Logan Canyon, August 4, 1938 (D.E.Hardy).

Order PLECOPTERA ^{6/} - Stoneflies

Acroneuria pacifica Banks. Brigham, June; Duchesne; Sevier; Trout Creek.
Alloperla coloradensis (Bks.). Salt Lake City, June 15, 1937.
A. dubia Frison. Logan Canyon, July 3, 1938 (D.E.Hardy).
A. elevata Frison. Brigham Canyon, June 30, 1938 (Hardy).
Capnia columbiana Clns. Logan, January 8, 1938.
C. elongata Clns. Logan Canyon, April 14, 1937.
C. nana Clns. Logan Canyon, April 3, 1938 (R.E.Nye).
Dictyopterygella knowltoni Frison. Logan, June 23, 1938.
Eucapnopsis brevicauda Clns. Big Cottonwood and Logan Canyons, April 1937.
Isoperla fulva Clns. Brigham Canyon, June 30, 1938; Honeyville; Kanosh; Ogden; Weber Canyon.
I. petersoni Clns. Logan, October 5, 1937.
Leuctra bradleyi Clns. Provo Canyon, April 10, 1937.
Nemoura californica Clns. Roosevelt, July 16, 1935.
N. cinctipes Bks. Brigham Canyon, May 1, 1937; Mantua; Sunset; Wellsville.
N. glabra Clns. Brigham Canyon, March 29, 1937; Mantua; Morgan; Salt Lake City.
N. lobata Frison. Logan Canyon, October 3, 1937 (D.E.Hardy).
N. oregonensis Clns. Logan Canyon, March 26, 1938.
Perla modesta Bks. Logan Canyon, July 25, 1938.
Perlodes americana (Klap.). Logan, April 20, 1937; Provo Canyon.
Perlomyia utahensis N.-C. Brigham Canyon, April 24, 1937; City Creek Canyon.
Pteronarcella badia Hagen. Blacksmith Fork Canyon, July 9, 1937; Fruitland; Logan; Strawberry Valley; Whiterocks.
Pteronarcys californica Newport. Blacksmith Fork Canyon, June 20, 1937; Ourey; Springville.
P. princeps Bks. Logan, July 23, 1929; Trout Creek.
Sialis cornuta Ross. Fruitland, March 30, 1937; Red Creek.
S. hamata Ross. Blacksmith Fork Canyon, July 9, 1935; Logan (J.A.Moacham).

5/ Knowlton, G. F. & Smith, C. F. and Harmston, F. C. Pea aphid investigations. Proc. Utah Acad. Sci. Arts and Let. 15:71-80, 1938.

6/ See also: Needham, J.G. and Christenson, R.O. Economic insects in some streams of northern Utah. Utah Agr. Exp. Sta. Bul. 201:1-36, 1927. Knowlton, G.F. and Harmston, F.C. Notes on Utah Plecoptera and Trichoptera,

Taeniopteryx nigripennis Bks. Logan Canyon, June 9, 1938 (R.E.Nye); Sardine Canyon.

T. occidentalis Bks. Logan Canyon, March 14, 1937.

Order MECOPTERA - Scorpion flies

Brachypanorpa oregonensis (McL.) Neola, July 13, 1935 (Harnston).

Panorpa submaculosa Carp. Uinta Canyon, August 5, 1935; Vernal, July 1, 1935 (H.).

P. maculosa Hagen. Whiterocks, Utah, August 6, 1935 (Harnston).

P. venosa Westwood. Uinta Canyon, August 6, 1935.

Order TRICHOPTERA - Caddis Flies

Larvae and adults caddis flies are fed upon extensively by fish, and comprise an important item of their food.

Agapetus debilis Ross. Logan Canyon, July 21, 1938 (D.E.Hardy).

Arctopsyche grandis Banks. Logan, July 9, 1938 (K.-W.P.Nye).

Asynarchus centralis Bks. Logan Canyon, August 1, 1937.

Brachycentrus americanus Bks. Logan, August 19, 1938; Manila.

B. aspilus Ross. Logan, August 10, 1938.

B. occidentalis Bks. Blacksmith Fork Canyon, May 4, 1937; Logan.

Cheumatopsyche compyla Ross. Current Creek, June 30, 1937.

C. pottiti Bks. Logan Canyon, July 25, 1937; Wellsville; Woods Cross.

Chimarra utahensis Ross. Gandy, September 26, 1936 (C.J. Sorenson).

Discosnecus atripes (Hagen). Logan, September 13, 1936.

D. unicolor Bks. Logan, August 28, 1937.

Dolophilus gabriella Bks. Logan, September 28, 1937.

Glossosoma alascense Bks. Logan, August 23, 1938; Mantua.

G. verdoni Ross. Big Cottonwood Canyon, April 24, 1937; Logan.

Glyptopsyche ormine Ross. Logan, November 3, 1934 (C.F. Smith); Smithfield (H.F. Thornley).

G. subborealis Bks. Logan, October 3, 1933 (T.O.Thatcher).

Hesperophylax consimilis Bks. Northern Utah, 1937.

H. magnus Bks. Logan, August 14, 1937 (K.-Nye); Manila; Monticello.

H. occidentalis Bks. Brigham, April 24, 1937; Logan; Ogden.

Hydropsyche californicus Bks. Logan Canyon, October 5, 1937 (Hardy).

H. cockerelli Bks. Blacksmith Fork Canyon, June 20, 1937; Ogden; Weber Canyon.

H. occidentalis Bks. Logan, August 14, 1937; Ogden; Murray; Spanish Fork.

H. oslari Bks. Logan, August 16, 1937.

Lepidostoma knowltoni Ross. Clinton, June 21, 1936.

L. pluvialis (Milne). Logan, July 21, 1938.

L. strophis Ross. Providence, August 20, 1931 (D.M.Hammond).

L. unicolor Bks. Blacksmith Fork Canyon, Sept. 1938; Lake Point; Logan.

Limnephilus externus Hagen. Logan, August 20, 1937; Strawberry Valley.

L. productus Hagen. Logan, August 14, 1937; Spanish Fork.

L. taloga Ross. San Rafael Swell, September 11, 1937 (W.P.Nye).

Macronema zebratum Hagen. Roosevelt, August 14, 1937.

Micrasema bactro Ross. Huntsville, September 21, 1938.

Oecetis inconspicua (Walker). Blacksmith Fork Canyon, July 12, 1938; Daniels's Canyon; Delta; Kanosh; Spanish Fork.

Oligophlebodes minutus Bks. Brigham, June 30, 1938; Current Creek; Logan; Woodland.

Philopotamus aequalis Bks. Logan, July 5, 1937.

Rhyacophila basalis Bks. Huntsville, September 21, 1938; Logan Canyon.

R. coloradensis Bks. Big Cottonwood Canyon, May 7, 1938; Logan.

R. verrula Milne. Logan, October 2, 1937 (R.E.Nye).

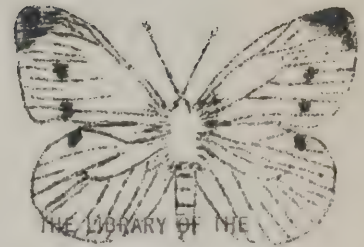
Triacnodes tarda Milne. Logan, August 29, 1937.

March 1939

LEPIDOPTERA

George F. Knowlton 1/

A large number of moths, butterflies and skippers, are present in Utah. Larvae of numerous species are injurious to cultivated crop and range plants, resulting in extensive damage each season. Many of the moths recorded here were captured in trap lights operated in connection with a study of the flight period of the tomato fruitworm, Heliothis obsoleta (Fabr.) 2/



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Family PAPILIONIDAE-Swallowtails

- Papilio daucus Bdv. Uinta and Wasatch Mountains (K.-Harmston).
P. eurymedon Bdv. Throughout the more mountainous regions of Utah.
P. indra Reak. Logan Canyon, June-August, 1937 (Harmston-R.E.Nye).
P. rutulus Bdv. Widely distributed in Utah (F.C.Harmston).
P. zelicaon Lucas. Provo, May 2, 1931; Logan (Knowlton).
Parnassius clodius Men. Logan Canyon, July; Strawberry Valley; Uinta Mts.
P. smintheus Dblly. Hew. Common at higher elevations, July-August.

Family PIERIDAE - Sulfurs and Whites

- Anthocharis sara Bdv. Uinta Mountains (F.C.Harmston).
Eurymus eurytheme Bdv. The alfalfa butterfly is widely distributed in Utah; it sometimes damages alfalfa.
Pieris occidentalis Reak. The western white butterfly is widely distributed.
P. rapae L. The cabbage butterfly is common throughout Utah, April-September, damaging cabbage and cauliflower each season.

Family NYMPHALIDAE-Brush-Footed Butterflies

- Aglais antiopa L. The mourning cloak is very common in Utah, sometimes being a serious pest to willow and elm.
A. milberti Godt. The nettle tortoise shell; widely distributed in Utah.
Argynnis leto Behr. Uinta Mountains (F.C.Harmston)
A. nokomis Edw. Whiterocks Canyon, July-August (Harmston).
Basilarchia loquini Bdv. Pine valley, October 1938 (K.-Harmston).
Danaus plexippus L. The monarch butterfly occurs throughout Utah.
Vanessa atalanta L. The red admiral, Logan, Roosevelt, May-August.
V. cardui L. The painted lady butterfly is common throughout Utah. Large spring migrations, lasting for several days, have been observed during several different seasons.
V. carye Hbn. Common throughout Utah.

- 1/ The writer is indebted to: J. H. McDunnough, A. Busck, Carl Heinrich, Wm. Schaus, J. F. Gates Clark, A. G. Richards, F. C. Harmston, and to the late F. H. Benjamin, for the identification of most of the material here recorded.
- 2/ The tomato fruitworm project is carried on in cooperation with the U. S. Bureau of Entomology and Plant Quarantine. H. E. Dorst of the federal bureau, located at the Utah Agricultural Experiment Station, Logan, has cooperated in this study.

Family LYCAENIDAE-Lycaenids

Atlides halesus Cr. The great purple hair streak sometimes occurs in Utah.
Strymon melinus Hbn. The bean lycaenid was found to be feeding upon pole beans at Spanish Fork during the summer of 1938.

Family HESPERIIDAE - Skippers

Epagyreus tityrus Fabr. Logan, June 23 (L.Greene); Providence, July 16, 1931, (D.M.Hammond); Roosevelt, June 17, 1936 (F.C.Harmston).
Urbanus tessellatus Scud. Logan, September 26, 1935 (A.Levi); Providence, July 5, 1931 (Hammond); Whiterocks, July 4, 1935 (Harmston).
Thorybes pylades Scud. Provo, June 18, 1912 (Tom Spalding).
Pholisora catullus Fabr. Ft. Duchesne, July 1932 (F.K.Stoffers).
Erynnis icelus S.-B. Provo, June 20, 1912 (T.Spalding).
E. juvenalis Fabr. Provo, June 13, 1912 and Stockton, May 1913 (Spalding).
E. persius Scud. Stockton, May 17, 1913 (T.Spalding).
E. afranius Lint. Stockton, July 21, 1913 (Spalding); Neola (Harmston).
Hesperia juba Scud. Bountiful, August 8, 1929 (H.J.Pack); Provo, June 24, 1912 (Spalding); Trout Creek, May 7, 1934 (H.B.Stafford).
Ochlodes agricola Bdv. Bountiful (H.J.Pack); Logan (J.A.Meacham).
Polites mystic Edw. Providence, August 10, 1930 (M.J.Janes).
P. sabuleti Bdv. Logan, September 1, 1930 (M.J.Janes); Providence, September 14, 1931 (D.M.Hammond).
P. sonora utahensis Skin. Logan, June 18, 1931 (W.L.Thomas).
Poanes taxiles Edw. American Fork, July 3, 1936 (H.F.Thornley); Springville, July 20, 1933 (E.W.Anton).

Family SPHINGIDAE - Hawk Moths

Phlegethontius sexta Joh. The tomato hornworm frequently damages tomato foliage in Utah, less frequently stripping leaves from potato plants.
P. quinquemaculata Haw. Damages tomato and potato plants.
Pachysphinx modesta Har. The big poplar sphinx frequently comes to trap lights. Logan; Roosevelt; Clinton; Granite.
Hemaris senta Stkr. Dry Gulch, Duchesne County, July 3, 1935 (Harmston).
Celerio lineata Fabr. The white lined sphinx is the commonest member of this family, throughout Utah. Its larvae attack apple, currant, dock, elm, gooseberry, grape, melon, as well as various truck crops and range plants.

Family SATURNIIDAE - Giant Silk Moths

Platysamia euryalus Bdv. The ceanothus silk moth sometimes strips foliage from willow in Utah.
P. gloveri Stkr. Mills, October 1938 (K.-Harmston).
Coloradia pandora Blake. The pandora moth larvae attack yellow pine needles in Utah forests.
Telea polyphemus Cram. Sometimes damages foliage of apple, elm, prune and willow.
Hemileuca nevadensis Stkr. Southern Utah.
H. oliviae Ckl. The ~~Maxico~~ range caterpillar feeds on grasses and may attack corn; Duchesne, June 28, 1925 (Harmston).

Superfamily NOCTUOIDEA

Family ARCTIIDAE - Tiger Moths

Hemihyalea labecula Grt. Oak Creek Canyon, July 1936 (L.Jeppson).
Halisidota argentata subalpina Fr. Moab, August 25, 1938 (K.-Harmston).
H. maculata agassizii Pk. Ft. Duchesne, July 17, 1936 (Harmston).

- H. tessellaris A.-S. Logan, July 16, 1933 (T.O.Thatcher).
H. oslari Rths. Logan, July 10 and 24, 1936 (Knowlton).
Euchaetias oregonensis Str. Hooper, August 17, 1937 (D.E.Hardy).
Eubaphe fragilis Str. American Fork and Spanish Fork, June 19-25, 1936 (Knowlton); Hooper (Hardy); Orem, July (Knowlton-H.E.Dorst).
Apantesis parthenice Kby. American Fork (H.F.Thornley); Farmington and Hooper, August 1936 (Knowlton); Logan, Orem and Spanish Fork, August 1936 (Knowlton).
A. ornato Pack. Logan, May 1930 (M.J.Janes).
A. proxima arizonensis Str. American Fork, August 15, 1936 (Thornley); Bountiful, September 1929 (H.J.Park); Clinton in June; Hooper, Kaysville, Spanish Fork (Knowlton); Logan (J.H.Linford).
A. nevadensis G.-R. Eureka, August 1911 (T.Spalding); Logan and Spanish Fork (Knowlton); in Utah. Also Riverdale, Idaho (C.F.Smith-Knowlton).
A. nevadensis-f. alexanderi McD. Logan, July 14, 1936 (Knowlton).
A. williamsi tooele B.-McD. Granite, June 14, 1936 (K.-M.W.Allen); American Fork (Thornley); Logan, Ogden (Knowlton); Strawberry (Anthon).
A. williamsi f. determinata Neum. In dewberry patch, Granite, July 24, 1935 (K.-Allen); Logan (T.O.Thatcher); Providence (K.-Smith).
Nemeophila plantaginis L. Tinpanogos Peak, July 1937 (L.L.Hansen).
Leptarctia californae f. decia Bdv. Logan Canyon, April 29, 1934 (T.O.Thatcher).
Diacrisia virginica Fabr. Yellow bear caterpillars are general feeders, at times attacking alfalfa, asparagus, beans, beets, blackberry, carrot, celery, corn, currant, gooseberry, eggplant, grape, hollyhock, melon, parsnip, peas, potato, raspberry, rhubarb, squash, turnip, and various other plants. Moths collected at Logan, Providence and Provo (K.-Janes-Thomas-Smith).
D. vagans Bdv. Lewiston, Utah and Riverdale, Idaho, May (K.-Smith).
Isia isabella A.-S. The banded wooly bear is frequently encountered, especially in spring. Farmington and Salt Lake City (Knowlton); Logan (Thatcher).
Estigmena ceres Dry. The acraea moth is common, its larvae attack beets, beans, truck crops and grasses.
Turupitia permaculata Pk. Monticello, September 1937 (K.-Harnston).
Arachnes picta Pk. Logan, August 14, 1937 (Knowlton); Oak Creek Canyon, July 4, 1937 (Lee Jeppsen).
Ectypia elio jessica Br. Oak Creek Canyon, July 1937 (Jeppsen).
Platyprepia guttata f. virginialis Bdv. Blacksmith Fork Canyon, June 1935 (J.A.Rowe-Smith); Logan (W.L.Thomas); Whiterocks (Harnston).
Arctia caja utahensis H.-Edw. Logan, August 1936 (K.-Smith-Harnston).

Family AGARISTIDAE - Wood Moths

- Alypia ridingsi Grt. Logan, July 6, 1933 (T.O.Thatcher).

Family PHALAENIDAE - Noctuids - Cutworms.

- Panthea virginaria Grt. Logan, July 10, 1937 (K.-Harnston).
P. palota Grt. Spanish Fork, June 7, 1937 (Dorst-Knowlton).
Raphia frater Grt. Logan, August 9, 1935 (Knowlton-Smith).
R. coloradensis Put. Hooper, July 26, 1936, Logan, Pleasant Grove and Spanish Fork, August 1, 1936 (Knowlton); Oak Creek Canyon (L.Jeppsen).
Acronicta americana eldora Sm. Logan and Orem, July 5-22, 1936 (Knowlton-H.E.Dorst); Hooper, July 28, 1937 (D.E.Hardy).
A. connecta Grt. Hooper, July (Hardy); Logan (K.-Harnston).
A. strigulata Sm. Logan, July 18, 1936 (C.F.Smith-Harnston).
Simyra henrici Grt. Logan (K.) and Oak Creek Canyon, August 1937 (Jeppsen).
Euxoa olivia Morr. Logan, Riverdale, Providence and Spanish Fork, August

- and September, 1934 and 1936 (K.-Smith). Also Preston, Idaho (Smith).
- E. cicatricosa G.-R. Cedar Valley and Spanish Fork, September (K.); Logan (F.H.Gunnell); Providence (Smith); San Rafael Swell (W.P.Nye).
- E. cicatricosa tepia Sn. Logan, September 11, 1934 (K.-Smith).
- E. quadridentata G.-R. Logan, July 22, 1936 (Knowlton); Lehi, September 21, 1936 (Thornley), Riverdale, September 10, 1934 (Knowlton-Smith).
- E. laetificans Sn. Logan, September 1937 (K.-H.). Also Preston, Idaho (Smith).
- E. hollemani Grt. Logan, August 7, 1936 (F.C.Harnston).
- E. andera Sn. Logan, September 1937 (K.-Harnston); Providence (Smith).
- E. plagifera Morr. Logan, August (Knowlton); Oak Creek (Jeppsen).
- E. ridingsiana Grt. Logan, July 27, 1937 (K.-Harnston).
- E. citricolor Grt. Cedar Valley, Farmington and Spanish Fork, August and September 1936 (Knowlton); Tooele, August 20, 1937 (K.-L.L.Hansen).
- E. catenula Grt. Hooper, September 1937 (Hardy); Lehi, July (Thornley).
- E. pallipennis Sn. San Rafael Swell, September 10, 1937 (W.P.Nye).
- E. satiens Sn. Occurs in Utah; also Riverdale, Idaho, September 1934 (Smith).
- E. mistruata Sn. Lehi, September 20, 1936 (H.F.Thornley).
- E. intrita alticola Sn. Logan, Providence, August 1934 and 1935 (K.-Smith).
- E. intrita f. reuda Stkr. Riverdale, Idaho, August (K.-Smith). Occurs in Utah.
- E. sponsa Sn. Hooper (Hardy) and Logan, July 1937 (Knowlton).
- E. excogita Sn. Logan, July 18, 1937 (Knowlton); Oak Creek Canyon (Lee Jeppsen); Spanish Fork July 1937 (Dorst-Knowlton).
- E. choris Har. Oak Creek Canyon, July 19, 1937 (L.Jeppsen).
- E. choriscorritans Sn. American Fork and Logan, August 1936 (Knowlton); Logan Canyon (F.H.Gunnell); Oak Creek Canyon, July 1926 (Jeppsen).
- E. nostra Sn. Farmington, July 21, 1936 (C.F.Smith).
- E. nimallonis Grt. Logan, August 7, 1936 (Knowlton).
- E. nessoria Harr. The reaper dart, Logan, August 7, 1934 (C.J. Sorenson); Farmington, July 1936 (K.). Also Riverdale, Idaho, September 9, 1934 (Smith-Knowlton). The larvae attack crops and wild grasses.
- E. septentrionalis Wlk. Farmington and Logan, August-September 1934 (K.).
- E. septentrionalis inordita B.-B. Riverdale, September 1934 (K.-Smith); Logan, August 1934 (Sorenson). Also Riverdale, Idaho (Smith).
- E. difformis Sn. Lehi, September 20, 1936 (H.F.Thornley).
- E. terrena Sn. Logan, July 25, 1937 (Knowlton-Harnston).
- E. lucida B.-McD. Logan Canyon, August 1934 (F.H.Gunnell).
- E. murdocki Sn. Lehi, September 1936 (H.F.Thornley).
- E. tessellata Har. American Fork, August, and Logan, July 1936 (K.); Oak Creek Canyon, (Jeppsen). Also Riverdale, Idaho, September 1934 (C.F.Smith).
- E. tessellata flaviscapula Sn. Tooele, August 22, 1937 (K.-L.L.Hansen).
- E. verticalis Gr. American Fork, August 1936 (K.); Logan (C.J.Sorenson).
- E. albipennis varbinalba Sn. Cedar Valley, September 9, 1936 (Knowlton). Also Riverdale, Idaho, August 27, 1934 (Knowlton-C.F.Smith).
- E. divergens abar Stkr. Granite, June-July, 1936 (M.W.Allen).
- E. obeliscoides Gn. Logan, August-September, 1934 (Sorenson, K.-Smith).
- E. costata idahoensis Grt. Spanish Fork, June 29, 1936 (Knowlton).
- E. ochrogaster Gn. Logan, July 2, 1937 (K.-Harnston); red-backed cutworm.
- E. silens Grt. Farmington, August 5, 1937 (Dorst-Knowlton).
- E. trieticula Morr. Kaysville, Logan, June-July 1936 (K.-Harnston).
- E. brocha Morr. Farmington, Logan, Spanish Fork, August-September (K.).
- Chorizaegrotis auxiliaris Grt. Logan, June and September (K.-Smith); Hooper (Hardy); Oak Creek Canyon, July (Jeppsen); Syracuse (Dorst-Knowlton).
- C. auxiliaris arrestis Grt. Logan, June 17, 1938 (K.-Hardy-G.S.Stains).
- Loxaegrotis albicosta Sn. American Fork (H.F.Thornley); Logan, July-August 1936 and Spanish Fork (Knowlton); Providence (Smith); Oak Creek Canyon (Jeppsen).

- Richia chortalis Harv. Lehi, September 10, 1936 (H. F. Thornley).
- Agrotis orthogonia Morr. Farmington and Cedar Valley, September 7-10, 1936 (Knowlton); adult reared, Cedar Valley, September 6, 1934 (C. J. Sorenson); San Rafael Swell, September (W. P. Nye).
- A. vetusta Wlk. Logan, August 1936 (K.-H.); also Riverdale, Idaho (Smith).
- A. vestusta catenuloides Sn. Hooper, September 1937 (Hardy); Spanish Fork, August 1936 (K.). Also Riverdale, Idaho, September 9, 1934 (Smith-Knowlton).
- A. venerabilis Wlk. Farmington, Logan, Providence, Spanish Fork, August-September 1934, 1936 (K.-Smith). Also Preston and Riverdale, Idaho (K.-Smith).
- A. venerabilis arida Ckll. Farmington, July; Logan, September (Knowlton); Providence, April 17, 1934 (Smith-K.). Also Preston, Idaho (Smith).
- A. volubilis Harv. Logan, June 6, 1936 (Knowlton); Hooper.
- A. ypsilon Root. The greasy cutworm moths were collected at Logan and Providence, August-September 1934, 1936 (Knowlton-Smith); Logan (C. J. Sorenson); Spanish Fork (Knowlton). Also Riverdale, Idaho (Smith).
- Feltia ducens Wlk. Abundant in August and September, 1934, 1936, 1937, at American Fork, Hooper, Logan, Providence and Spanish Fork (K.-Smith).
- F. subgothica Haw. American Fork, Hooper, Logan, Providence (K.-Smith), July-August 1934-1936; Hooper, September 4, 1937 (D. E. Hardy).
- F. herilis Grt. American Fork, July 20, 1936 (H. F. Thornley).
- Copablepharon canariana McD. Farmington, August 5, 1937 (Dorst-Knowlton); Logan, July 1936 (Knowlton-Smith); Oak Creek Canyon, 1937 (L. Jeppsen).
- C. serrata McD. Hooper, August 14, 1936 (Knowlton).
- Protophyzia laena Grt. Clinton, June 26, 1936 (Knowlton); Hooper, August 1937 (Hardy); Oak Creek Canyon, July 21, 1936 (Lee Jeppsen).
- Spaelotis clandestina Harr. Hooper, June 2, 1934 (Hardy); Farmington (Gunnell); Springville (Anthon); Also Preston, Idaho, September 1934 (Smith).
- S. havilae Grt. Farmington, June (F. H. Gunnell); Hooper (Hardy).
- Peridroma margaritosa Harv. Farmington, July 26, 1936 (Gunnell); Logan, September (K.); Hooper, August (K.-Dorst-Hardy). Also Overton, Nevada June 1936 (C. J. Sorenson).
- P. saucia Hbr. Logan, May (Harmston). Also Riverdale, Idaho (Smith-K.).
- Caradrina extima Oshs. Farmington, August 1936 (Knowlton).
- Graphiphora c-nigrum L. American Fork, July-August, 1936 (Knowlton); Hooper, Logan, August and September, 1936 (K.); Spanish Fork, June (K.).
- G. mithi Snell. Logan, July 28, 1936 (Knowlton).
- Setagrotis atrifrons Grt. Logan Canyon, August 1934 (C. F. Smith).
- Pseudoglaea olivata Haw. Farmington and Logan, September 1936 (Knowlton); Lehi, September 17, 1936 (H. F. Thornley).
- Hemigraphiphora plebeia Sn. Logan, August 15, 1937 (Knowlton).
- Abagrotis erratica ornatus Sn. Farmington, August 21, 1936 (Knowlton).
- A. mirabilis Grt. Hooper, July 4, 1937 (H. E. Dorst-Knowlton).
- A. discoidalis Grt. Oren, August, September 1936, 1937 (K.-Hardy).
- A. trigona Sn. Farmington, August 11, 1937 (Dorst-Knowlton).
- A. placida Grt. Logan, August 9, 1936 and August 14, 1937 (Knowlton); Granite, June 14, 1936, at light (M. W. Allen).
- A. forbesi Benj. Farmington, August 18, 1936 (Knowlton); Hooper, July (Hardy); Logan, at light (Smith-Harmston).
- A. variata Grt. Adult reared, Logan, July 26, 1936 (Knowlton-Harmston); Oak Creek Canyon, August 10, 1937 (Lee Jeppsen).
- Rhynchagrotis exsertistigma Morr. Logan, July 1936 (K.-Harmston).
- Pronoctua typica Sn. Oak Creek Canyon, August 10, 1937 (L. Jeppsen).
- Ufeus hulsti Sn. Ft. Duchesne, May and August 1935 (Harmston); Logan Canyon, July 7, 1935 (F. H. Gunnell); Oak Creek Canyon, July 1936 (L. Jeppsen).

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- Trudestra hadeniformis Sn. Hooper, August 8, 1937 (D. E. Hardy).
Scotogramma fulgura B.-McD. Santa Clara, April 25, 1935 (K.-Smith).
S. trifolii Root. Farmington, July 31, 1936 (K.); Hooper, Logan and Spanish Fork, August 1936 (K.); Orem and Spanish Fork, July 1936 (K.-C.F. Smith).
S. mutata Dod. Logan, June to August, 1936 (K.); Syracuse.
S. fervida B.-McD. Orem, August 9, 1936 (Knowlton).
S. crotchii Grt. Cedar City, May 10, 1938 (K.-D.L. Sargent; Logan (K.-Hardy).
Tridepia nova Sn. Spanish Fork, July 6, 1936 (Knowlton).
Trichoclea antica Sm. Ogden, June 27, 1937 (K.-Dorst-Hardy).
T. postica Sn. Farmington, Logan, June-August (K.); Hooper (Hardy).
Polia discalis Grt. Logan, July 30, 1938 (Knowlton-Hardy).
P. subjuncta G.-R. Logan, July (K.-Hardy); Tooele (L.L. Hansen).
P. atlantica Grt. Logan, July-August, 1936 (K.); Oak Creek (Jeppsen).
P. legitima Grt. Hooper, July 21, 1937 (K.-Hardy).
P. noverca Grt. Logan, June, August (Knowlton-Harnston-Smith).
Lacinipolia vicina Grt. American Fork, August 19, 1936; Farmington, July-August, (K.); Logan, June 10, 1937 (K.); Oak Creek Canyon (L. Jeppsen).
L. pensilis (group). Riverdale, Idaho, August-September 1934 (Smith).
L. renigera St. Providence, August 8, 1934 (C. F. Smith).
L. stricta tensica Sn. Blacksmith Fork Canyon, September 8, 1938 (K.); Logan, August, September, 1936 (K.); Providence (Smith); Spanish Fork (K.). Also Preson and Riverdale, Idaho, September 1934 (C.F. Smith).
Ly lorea Gn. Logan, June 23, 1933 (T. O. Thatcher).
L. olivacea lucina Sn. Logan, August 6, 1936 (Knowlton).
L. olivacea altua Sn. Logan, August 20, 1936 (Knowlton-Smith).
L. marinitincta Harv. Granite and Logan, July-August, 1935 (Knowlton).
L. illaudabilis Grt. Logan, July-September (K. Sorenson); Oak Creek (J.).
L. illaudabilis albofuthata Grt. Logan, Spanish Fork, Kanysville, June, August (Knowlton).
Lasionycta perplexa Sn. Logan, July 11, 1929 (H. J. Pack.).
Tricholita chipeta Barnes. Logan, August 26, 1937 (Knowlton).
Ulolonche dilecta H. Edw. Orem, June 23, 1936 (Knowlton); Oak City (J.).
U. disticha Morr. Granite, June 24, 1936 (M. W. Allen).
U. orbiculata Sn. Logan, June 23, 1936 (K.-Harnston).
Orthodes utahensis Sn. Logan, August 2, 1937 (K.-Hardy); Hooper, (Hardy); Spanish Fork (Dorst-K). Also Riverdale, Idaho, August 1934 (K.-Smith).
O. eureka B.-B. Blacksmith Fork Canyon, September 22, 1938 (Knowlton).
O. rufula Grt. Santa Clara, April 25, 1935 (K.-Smith).
O. oviduca Gn. Logan, May 24, 1938 (Knowlton-Hardy); Spanish Fork, June 3, 1937 (Knowlton-Dorst).
O. fractura Sn. Logan, July 8, 1937 (Knowlton-F. C. Harnston).
O. furfurata Grt. Oak Creek Canyon, July 26, 1936 (Lee Jeppsen).
Nephelodes demaculata B.-McD. Logan, August 16, 1938 (K.-W. P. Nye).
N. mendica B.-L. Farmington, September 9, 1936 (K.); Logan, August 23, 1934 (Knowlton-Smith). Also Preson, Idaho, September 13, 1934 (Smith).
Xylonyges crucialis Harv. Logan, May and August, 1937 (K.-Harnston).
X. rubrica rubricoides B.-B. Logan, April 17, 1938 (Knowlton).
X. rubrica mustelina Sn. Santa Clara, April 25, 1935 (K.-Smith); Logan, May (T.O. Thatcher). Also Riverdale, Idaho, May 7, 1935 (Knowlton-Smith).
X. perlubens Grt. Logan, May 9, 1937 (Knowlton-Harnston).
Stretchia plusiaeformis H. Edw. Logan, May 1, 1937 (Knowlton-Harnston).
Orthosia revicta Morr. Logan, April 23, 1938 (Knowlton-Hardy). Also Riverdale, Idaho, May 10, 1935 (Knowlton-C. F. Smith).
O. hibisi Gn. Logan, March-April, 1933-1938 (E.W. Anthon, K.-Hardy).
O. hibisci nubilata Sn. Logan, May 22-28, 1935 (K.-Smith). Also Riverdale, Idaho, May 10-20, 1935 (Knowlton-Smith).
O. hibisci quinquefasciata Sn. Logan, April 2, 1935 (Knowlton).
Ceramica picta Harr. Farmington, July 21, 1936 (Smith); Logan and Hooper, August; Oak Creek Canyon (L. Jeppsen). Also Riverdale, Ida. (K.-Smith)

- Dargida procincta Grt. Hooper, August 23, -September 17, 1937 (D. E. Hardy); Logan, September 30, 1938 (Dorst-Knowlton-Hardy).
- Protoleucania albilinea Hbn. Farmington, July 26-31, 1936 (Knowlton); ~~L. American Fork and Pleasant Grove, July 1936 (Knowlton-Dorst)~~.
- Leucania commodies Gn. Logan, July 27, 1937 (K. and Stanford).
- L. farcta Grt. Logan, July 8, 1938 (Knowlton-Hardy); St. George, April 26, 1935 (K.-Smith); Farmington, (K.); Hooper, August 16, 1937 (Dorst-Hardy).
- L. unipuncta Haw. Cedar City, May 23, 1938 (Knowlton-D. L. Sargent); Logan October 2, 1938 (K.-W. P. Nye); Spanish Fork and Orem, August 1937 (K.).
- L. luteopallens Sm. Logan, October 14, 1938 (Knowlton-Nye).
- L. luteopallens minorata Sm. Hooper, August 17, 1937 (Hardy); Logan, June 6, 1935 (Knowlton-Smith); Providence, August 1934 (C. F. Smith).
- L. rubripallens Sm. Logan and Providence, July-August, 1935 (K.-Smith).
- L. anteoclara Sm. Logan, July 28, 1937 (Knowlton).
- Copioecucullia antipoda Stkr. Logan, June (K.-Hardy); Stockton (Spalding).
- Pleroma cinerea Sm. Logan, September 7, 1936 (Knowlton).
- Cucullia dorsalis Sm. Logan, August 30, 1937 (Knowlton).
- C. florea obscurior Sn. Logan, May-June, 1937 (Harmston).
- C. onissa Dod. Logan, July 17, 1937 (Knowlton).
- Lepipolys perscripta Gn. Cedar City, May 23, 1938 (K.-D.L. Sargent); Ft. Duchesne, July 17, 1935 (F. C. Harmston).
- Onocnemis homogenea Grt. Logan, July (K.); Oak Creek Canyon (Jeppsen),
- O. astrigata B.-McD. Oak Creek Canyon, August 7, 1937 (Lee Jeppsen).
- Homocidena infixa dinalda Sm. Granite, July 21, 1935 (K.-M. W. Allen).
- Pseudenarta caeca Dod. Spanish Fork, August 31, 1936 (Knowlton).
- P. flava Grt. Lehi and Logan, September, 1936 (Knowlton).
- P. crocea H. Edw. Lehi, September 18, 1937 (H. F. Thornley).
- Trichocerapoda oblita Grt. Riverdale, Idaho, September 1934 (K.-Smith).
- Cerapoda stylata Sm. Clinton, June 29, 1936 (K.-Dorst); Farmington, June 19, 1937 (F. H. Gunnell); Green River, May 24, 1938 (K.-Harmston).
- Brachylonia populi Stkr. Logan, July, September, 1937 (K.-Harmston).
- Litholonia napaea Mr. Logan, September 14, 1937 (Knowlton-Harmston); Spanish Fork, August 31, 1936 (Dorst-Knowlton).
- Graptolitha torrida Sm. Logan, March 28, 1935 (Knowlton).
- G. georgii Grt. Logan, February 28, 1938 (K.) and September 1933 (Anthon); Vineyard, October 1932 (T. Spalding). Also Riverdale, Idaho (K.-Smith).
- Xylena numera Lint. Vineyard, October 18, 1912 (Tom Spalding).
- X. cinerita Grt. Logan, April-May (K.-Smith) and June (Thatcher).
- Fishia evelina Fr. Logan, September 26, 1936 (Knowlton).
- F. discors Grt. Logan, September 13, 1934 (Knowlton).
- Upsilia tristigmata Grt. Logan, April 1, 1935 (Knowlton-Smith).
- Rusina ferrugineoides Gr. Logan, September 1938 (Knowlton-Nye).
- R. straminea Sm. Logan, September 7, 1936 (Knowlton).
- R. decipiens Grt. Logan, September 20, 1937 (Knowlton-Harmston).
- Anathis puta dusca Sm. Logan Canyon, August 28, 1936 (Knowlton).
- A. aggressa Sm. Logan, September 7, 1936 (Knowlton).
- Homoclaea carbonaria Harv. Logan, September 20, 1935 (Knowlton-Smith); and May 5, 1937 (Harmston) Vineyard, October 1, 1912 (Tom Spalding). Also Riverdale, Idaho, May 7, 1935 (Knowlton-C. F. Smith).
- Septis cuculliformis Grt. Riverdale, Idaho, June 30, 1935 (K.-Smith).
- S. occidentis Grt. Hooper, July 21, 1937 (Dorst-Hardy).
- S. arctica Frr. Farmington, July (Gunnell); Granite (Allen); Logan (K.).
- S. spaldingi Sm. Hooper, June 1937 (Hardy); Logan (K.-Harmston).
- S. dubitans Wlk. Hooper and Logan, July 1937 (Knowlton-Hardy).
- Crymodes devastator Brace. Logan, Farmington, Orem and Spanish Fork, July-August, September 1934, 1936 (Knowlton-Smith-F. H. Gunnell).
- C. longula Grt. Logan, September 15, 1938 (Knowlton-W. P. Nye).
- Protagrotis niveivenosa Grt. Pleasant Grove, August 1937 (K.-Harmston).
- Oseptis characterica Sm. Granite, June 1936 (M. W. Allen).

The first part of the paper discusses the importance of the study of the history of the United States. It is pointed out that the study of history is not only a means of understanding the past, but also a means of understanding the present and the future. The author argues that the study of history is essential for the development of a nation and for the well-being of its people.

The second part of the paper discusses the role of the government in the development of the United States. It is pointed out that the government has played a major role in the development of the country, and that its actions have shaped the course of history. The author argues that the government should continue to play a role in the development of the country, and that its actions should be guided by the principles of justice and fairness.

The third part of the paper discusses the role of the individual in the development of the United States. It is pointed out that the actions of individuals have shaped the course of history, and that the individual has a responsibility to contribute to the development of the country. The author argues that the individual should be encouraged to exercise his or her rights and responsibilities, and that the government should protect these rights and responsibilities.

The fourth part of the paper discusses the role of the future in the development of the United States. It is pointed out that the future is uncertain, and that the actions of the present will shape the future. The author argues that the future should be planned, and that the actions of the present should be guided by the principles of justice and fairness.

The fifth part of the paper discusses the role of the United States in the world. It is pointed out that the United States has a responsibility to lead the world, and that its actions should be guided by the principles of justice and fairness. The author argues that the United States should continue to play a role in the world, and that its actions should be guided by the principles of justice and fairness.

- Oligia indirecta Grt. Spanish Fork, July 17, 1937 (Dorst-Knowlton); Hooper, (D. E. Hardy); Logan, July 1936 and 1937 (Knowlton).
- O. tona Grt. Logan, July 27, 1937 (Knowlton-Harmston).
- O. fractilinia Grt. American Fork, July, September (H. F. Thornley).
- Benjaminiola colorado Sn. Logan, August 26, 1936 (Knowlton).
- Archangra oblonga Grt. Hooper and Logan, August 12-14, 1936 (Knowlton); Springville, August 12, 1937 (Dorst-Knowlton).
- G. subflava Grt. Hooper, July 23, 1936 and Spanish Fork, July (Knowlton-Dorst) Pleasant Grove, August 6, 1937 (Knowlton-L. L. Hansen).
- Helotropha reiformis Grt. Hooper, July 13, 1937 (D. E. Hardy).
- Hydroeca immanis Gr. Logan August 14th, 1936 (Knowlton).
- H. perobliqua Harp. Hooper, July 24, 1937 (Hardy); American Fork, July 1936 (Thornley); Logan, July 12, 1937 (Knowlton-Harmston).
- H. stramentosa Gr. Riverdale, Idaho, August 29, 1934 (Knowlton-Smith).
- Papaipema circulucens vella Benj. Spanish Fork, August 31, 1936 (Knowlton); Farmington and Logan, September 1936 (Knowlton).
- Chytonix divesta Grt. Farmington (F. H. Gunnell) and Logan (Knowlton), July 1936; Oak Creek Canyon, August 7, 1937 (Lee Jeppsen).
- Amphipyra alabella brunneopatra Str. Logan, July 10, 1936, (Knowlton); Oak Creek Canyon, July 4, 1936 (L. Jeppsen).
- Rhizagrotis albalis Grt. Granite, June 14, 1936 (Knowlton); Green River, May 24, 1938 (Knowlton-Harmston); Logan, (Knowlton).
- Andropolia diversilineata Grt. Logan, August 11, 1937 (Knowlton); Oak Creek Canyon, July 26, 1936 (Lee Jeppsen).
- A. olorina Grt. Logan, August 16, 1933 (T. O. Thatcher).
- A. theodori Grt. American Fork, July 19, 1936 (Knowlton); Logan, August 1, 1934 (C. J. Sorenson).
- Platyperigena extima Wlk. Logan, May 30, 1938 (K.-Hardy); Springville, August 12, 1937 (Knowlton-Dorst).
- Protoperigena posticata Harv. Tooele, August 20, 1937 (Knowlton-Hansen).
- Prodenia ornithogalli Gr. Logan, July 26, 1938 (K.-Hardy).
- P. praefica Grt. Logan, August 23, 1936 (Knowlton).
- Enargia decolor Wlk. American Fork, August 11, 1936 (Knowlton); Farmington, July, 1937 (Knowlton); Pleasant Grove, July 26, 1936 (Dorst-Knowlton).
- Luceria tranquilla Grt. Logan, June-July, 1936-1937 (Knowlton).
- Arzama pallida B.-B. Spanish Fork, July 16, 1936 (Knowlton).
- Perania dissociata B.-McD. Logan, July 20, 1938 (K.-Hardy).
- Cosmia caleni Harv. Farmington, July 27, 1935 (Knowlton); Granite, July 25, 1935 (M. W. Allen).
- C. canescens Behr. Logan, July 13, 1936 (Knowlton); Oak Creek Canyon, August 7, 1937 (Lee Jeppsen).
- Hadenella pergehtilis Grt. Logan, August 20, 1936 (Knowlton); San Rafael (Swell), September 11, 1937 (W. P. Nye).
- Stibadium spurosus Grt. Farmington, July 22, 1937 (K.-Harmston); Hooper, Orem and Spanish, July 1936 (Knowlton).
- Stiria rufifrons Grt. American Fork, August 30, 1936 (Knowlton); Hooper, Logan and Spanish Fork, August 1936 (Knowlton).
- Triocneris saporis Grt. Pleasant Grove, July 24, 1936 (Knowlton).
- Euthisanotia unio Hbn. American Fork, July 23, 1936 (Knowlton).
- Heliothis phloxiphaga G. & R. American Fork, Farmington, Logan, Orem, Pleasant Grove, Spanish Fork and Syracuse, June-August (Knowlton). This species regularly appeared in trap light catches earlier in the season than the corn earworm moth.
- H. phloxiphaga P. luteitinctus Grt. Farmington, July 21, 1936 (C. F. Smith); Hooper, August 28, 1937 (Knowlton-Dorst); Pleasant Grove, Spanish Fork and Springville, July-August (Knowlton).
- H. obsoleta Fabr. The corn earworm or tomato fruitworm occurs throughout Ut., July-August, -September and is responsible for damage to sweet corn and tomato fruits. The extent of damage varies markedly from season to season, serious injury often occurring.

- Dasympodaea meadi Grt. Layton and Logan, June 1936 (Knowlton).
Rhodophora gaurae A.-S. Spanish Fork, 1936 (Knowlton).
R. florida Gn. Farmington, July 27, 1936 (Knowlton); Granite, September 16, 1935. (M. W. Allen); Logan, Pleasant Grove and Spanish Fork, July 1936 (Knowlton).
Thyreion ligesae Sm. St. George, April 26, 1935 (Knowlton-C. F. Smith).
Schinia acutilinea Grt. American Fork, Farmington, Orem, Provo and Spanish Fork. August 1936 (Knowlton).
S. walsinghami Hy. Edw. American Fork, Spanish Fork, August 1936 (Knowlton).
S. tertia Grt. Spanish Fork, August 16, 1936 (Knowlton).
S. albafascia Sm. Logan, August 9, 1937 (Knowlton).
S. marginata Haw. American Fork and Farmington, July 1936 (Knowlton).
S. arcigera ferricosta Sm. American Fork, August 2, 1936 (Knowlton); Logan and Orem, August 1936 (Knowlton); Oak Creek Canyon, August 3, 1937 (Lee Jeppson); Spanish Fork, August 3, 1936 (Knowlton).
Grotella sampita Barnes. Orem, July 4, 1936 (Knowlton).
Ponomotia sutrix Grt. Granite, July-August 1935 (M. W. Allen); Pleasant Grove and Spanish Fork, June 1937 (Knowlton).
Conochares arizonae Hy. Edw. Farmington, Spanish Fork, June-July (Knowlton).
Tarachidia candefacta Hbn. Granite, July 25, 1935 (M. W. Allen).
T. binocula Grt. Farmington, July 1936 (F. H. Gunnell); Pleasant Grove (Knowlton).
T. semiflava Gn. Oak Creek Canyon, July 20, 1936 (Lee Jeppson).
Theresea flavicosta Sm. Farmington, July 26, 1936 (Knowlton).
T. angustipennis Grt. Spanish Fork, July 3, 1936 (Knowlton).
Acontia areli Stkr. Pleasant Grove, July 26, 1937 (K.-Hansen); Providence, August 5, 1934 (C. F. Smith).
A. abdominalis Grt. Logan, August 13, 1934 (F. H. Gunnell).
A. sedata Hy. Edw. Farmington, July 22, 1936 (Gunnell).
A. cretata G.-R. Pleasant Grove and Syracuse, July 1936 (Knowlton).
Marathyssa inficita Wlk. Pleasant Grove, June 25, 1937 (K.-Hansen).
Paectes pygmaea Hbn. Pleasant Grove, Spanish Fork, June-July (Knowlton).
Sarrothrips revayana Scop. Logan, August 24, 1936 (Knowlton).
Autographs falcifera Kby. American Fork, Orem, Spanish Fork, July-August (K.).
A. californica Spey. Logan, July 4, 1936 (Knowlton).
Catocala aholibah Stkr. Farmington, July 23, 1936 (F. H. Gunnell).
C. irene valeria Hy. Edw. Hooper, August 11, 1937 (D. E. Hardy).
C. faustina Stkr. Springville, August 21, 1933 (E. W. Anthon).
C. verecunda Hlst. Farmington, July 23, 1936 (F. H. Gunnell).
C. aspasia Stkr. Logan, August 14, 1937 (Knowlton).
Caenurgina crassiuscula Haw. Hooper, July 19, 1937 (D. E. Hardy); Logan, August 9, 1937 (Lee Jeppson); Spanish Fork, July 17, 1937 (Dorst-Knowlton).
C. erechtea Cram. Logan, June 10, 1938 (K.-Hardy).
Zale rubiata Sm. Logan, June 23, 1933 (T. O. Thatcher).
Toxocampa victoria Grt. Oak Creek Canyon, August 10, 1937 (L. Jeppson).
Litocala sexsignata Harv. Salt Lake City, April 24, 1937 (K.-Harnston).
Melipotis jucunda Hbn. Logan, August 13, 1938 (K.-Hardy).
M. versabilis Harv. American Fork, July 19, 1936 (H. F. Thornley); Logan and Pleasant Grove, July-August 1937 (Knowlton).
Drasteria mirifica Hy. Edw. Tooele, June 19, 1938 (K.-Hansen).
Synedoida inepta Hy. Edw. Logan, July 1, 1937 (Knowlton).
S. pallescens G.-R. American Fork and Farmington, July 1936 (Knowlton).
S. divergens Behr. Logan, June 1936 (Knowlton); Spanish Fork, July (Dorst-K.).
S. hudsonica G.-R. Logan, July 25, 1937 (Knowlton).
S. seposita Hy. Edw. Granite, July 15, 1936 (M. W. Allen).
S. adumbrata Behr. Logan, June 20, 1936 (Knowlton).
S. perplexa Hy. Edw. Logan, June 27, 1938 (K.-W.P.Nye); Spanish Fork, July 2, 1937 (Dorst-Knowlton).
S. howlandi Grt. Logan, August 28, 1937 (Knowlton).

1. The first group of authors (e.g., [1, 2]) considers the problem of the stability of the motion of a system of particles in the field of a central force. The results of these authors are in qualitative agreement with the results of the present study.

Scoliopteryx libatrix L. Logan, July 25, 1937 (Knowlton-Harmston).
Hypena humuli Harr. Logan, April, 1935 (Knowlton).

Family - PERICOPIDAE

Gnophaela latipennis Bdv. LaPoint, August 11, 1935 (Harmston); has also been collected along the Wasatch Mountains from Provo northward to Logan.

Family - NOTODONTIDAE - The Prominents

Datana perspicua G.-R. Oak Creek Canyon, July 21, 1936 (L. Jeppson).
Ichthyura apicalis Wlk. Cedar City, May 10, 1938 (K.-D. L. Sargent); Logan, July 1937 (Knowlton); Pleasant Grove (K.-Harmston).
I. apicalis bifaria Hy. Edw. Logan, August 7, 1936 (Knowlton).
I. brucei multnoma Dyar. Logan, October 4, 1931 (W. L. Thomas).
I. albosigma specifica Dyar. Hooper, June 22, 1936 (Knowlton).
Odontesia elegans grisea Stk. Logan, May 24, 1937 (K.-Harmston).
Pheosia rimosa Pack. Logan, July 10, 1936 (K.-Harmston).
Heterocampa lunata Hy. Edw. Logan, July-August, 1937 (K.-Harmston, K.-W.P. Nye); Oak Creek Canyon, August 3, 1937 (L. Jeppson).
H. manteo Dbldy. Logan, July 16, 1937 (Knowlton-Harmston).
Fentonia dorothea Dyar. Oak Creek Canyon, July 18, 1937 (Jeppson).
Dicentria coloradensis H. Edw. Oak Creek Canyon, August, 1937 (Jeppson).
D. perangulata H. Edw. American Fork, July 8, 1936 (Knowlton); Farmington, Logan and Orem, August 9 to 26, 1936 (Knowlton).
Schizura iponoeae Dbldy. Logan, July 4, 1936 (Knowlton); Pleasant Grove, June 27, 1937 (Knowlton-Harmston).
S. unicornis deserta Barnes. Pleasant Grove, August 5, 1937 (K.-Hansen).
Cerura scolopendrina Bdv. Logan, July 28, 1937 (Knowlton); Hooper, August 21, 1937 (K.); Oak Creek Canyon, August 7, 1937 (Jeppson).
Datana perspicua G.-R. Oak Creek Canyon, July 21, 1936 (Lee Jeppson).
Hyperaeschra tortuosa Tepp. Hooper, July 4, 1937 (Knowlton-Dorst).
Glyphisia septentrionalis ridenda Hy. Edw. Logan, June, August (Knowlton); Pleasant Grove, July 15, 1937 (Knowlton-Hansen).

Family LIPARIDAE

Olene vagans B.-McD. Hooper, August 8, 1937 (Hardy); Logan, June 21, 1937 (Knowlton); Pleasant Grove, June 26, 1937 (Knowlton-L. L. Hansen).

Superfamily BOLBYCOIDEA

Family LASIOCAMPIDAE - Tent Caterpillars

Tolyte glenwoodi Barnes. Logan, August 1935 (K.-Smith); Roosevelt (Harmston).
Malacosoma americana Fabr. The apple tree tent caterpillar, Brigham, 1907 (E. D. Ball).
M. fragilis Str. The great basin tent caterpillar, St. George, 1919 (Morris); attack aspen, chokecherry and cottonwood.
M. disstria Hbn. The forest tent caterpillar, Ft. Duchesne, June 21, 1936 (Harmston); Logan, 1921 (G. E. King); Oak Creek Canyon, August 1, 1937 (L. Jeppson); River Heights. Frequently strip chokecherry bushes of foliage in Brigham and Wellsville Canyons. Also attack apple, rose, willow, plum, prune and poplars.
Epicnaptera americana Harris. Ft. Duchesne, June 19, 1935 (Harmston); Logan, May 10, 1937 (Knowlton-Harmston).

Superfamily DREPANOIDEA

Family THYATRIDAE

Euthyatira semicircularis Grt. Logan, June 12, 1937 (K.-Smith).

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Superfamily GEOMETROIDEA
Family - GEOMETRIDAE - Measuring Worms

- Brephos infans Moesch. Ft. Duchesne, July 15, 1935 (Harmston).
Dichorda rectaria Grt. American Fork, July (Thornley); Logan (Knowlton).
Paleacrita vernata Peck. The spring canker worm.
Scopula impunctata Warr. North Logan, June 21, 1923 (L. Green).
Storria eremiata Hlst. Granite, July 21, 1935 (M. W. Allen).
Stannoctenis morrisata Hlst. Logan, June 13, 1937 (K.-Smith).
Epirrhoe plebeculata Gr. Logan Canyon, April 20, 1935 (K.-Thatcher).
Perizoma polygrammata Hlst. San Rafael Swell, Sept. 11, 1937 (W. P. Nye).
Hydrelia albifera Wlk. Logan, August 9, 1931 (W. L. Thomas).
Fernaldella finetaria G.-R. American Fork and Logan, July 1937 (K.).
Sericosomacaliforniaria Pack. Riverdale, Idaho, May 1935 (K.-Smith).
S. juturnaria Gn. Logan, July 24, 1937 (Knowlton-Harmston).
Philobis pexolarata Pears. Farmington, August 5, 1937; Logan (K.-Dorst).
P. aspirata Pears. Ft. Duchesne, July 21, 1935 (Harmston).
Episemisia cerwinaria Pack. Logan, June 20, 1936 (Knowlton).
Semiothisa curvata Grt. Logan, July 10, 1937 (K.); Oak Creek Canyon (Jeppson).
S. irrorata Pack. Logan, June 20, 1937 (K.-Harmston).
S. neptaria sinuata Pack. Hooper, July 4, 1937 (K.-Dorst); Logan (K.-Harmston).
S. subminiata Pack. Clinton, June 26, 1936 (Knowlton).
S. meadiaria Pack. American Fork, June 6, 1936 (K.); Moab, July (K.).
S. decorata Grossb. American Fork, July 7, 1937 and Hooper (K.-Dorst).
Itane flavicaris Pack. The western gooseberry spanworm, Hooper, July 19, 1937 (D. E. Hardy), feeds on currants and gooseberries.
I. colata Grt. Logan, August 9, 1934 (Thatcher).
Hesperumia suephuria Pack. Farmington, July 1936 (K); Logan, August (K.).
Stenoporpia anastomosaria Grossb. American Fork, July 19, 1936, Hooper (K.).
Vitrinella pampinaria Gn. Hooper, July (Hardy); Pleasant Grove (K.-Hansen).
Hulstina formosata Hlst. Farmington, July 22, 1937 (K.-Dorst).
Erannis coloradota Hlst. Logan, September 23, 1936 (Knowlton).
Euchlaena johnsonaria Fitch. Logan, September 7, 1936 (Smith-Harmston).
E. mollisaria Hlst. Logan, July 30, 1938 (Knowlton-Hardy).
E. serrata Dru. American Fork, June 29, 1936 (Knowlton).
Nematocampa limbata Haw. Logan, August 3, 1929 (H. J. Pack).
Pero morrisonarius Hy. Edw. Hooper and Logan, July 1, 1936 (K.).
P. modestus Grossb. Oak Creek Canyon, July 19, 1937 (L. Jeppson).
Enyppia packardata Taylor. Logan, August 20, 1936 (K.-Smith).
Plataea trilinearia dulciaria Grt. Ft. Duchesne, July 19, 1936 (Harmston).
Somatolophia ectrapolaria Grossb. Logan, July 22, 1937 (K.-Harmston).
Prochoerodes forficaria Gn. Logan, June 20, 1938 (Knowlton).

Family-PYRALIDIAE - Snout Moths

- Acroncosa similella B.-McD. Granite, June 14, 1936 (M. W. Allen).
Ambesa laetella Grt. Farmington, July 18, 1936 (F. H. Gunnell); Logan, June 27, 1937 (K.-Harmston).
Chalcoela iphitalis Wlk. Logan, July 2, 1936 (K.-Harmston).
Cornifrons sinalis Grt. Logan, June 21, 1936 (Knowlton); Oak Creek Canyon, July 18, 1937 (Lee Jeppson).
Crambus ruricolella Zell. Bountiful, August 31, 1929 (H. J. Pack).
C. topiarius Zell. Logan, July 1, 1938 (Knowlton-Smith).
C. trisectus Wlk. Riverdale, Idaho, August 12, 1934 (C. F. Smith).
C. vulgavagellus Clem. Logan, August 23, 1936 (Knowlton).
Diastichtis argyralis Hbn. Hooper and Logan, July 1937 (Knowlton).
Dioryctria xanthoenobares Dyar. Logan and Farmington, July 1936 (K.).

THE HISTORY OF THE
UNITED STATES OF AMERICA

The history of the United States of America is a story of growth and change. It begins with the first settlers, who came to the continent in search of a new life. They found a land of vast resources and a people who were different from them. Over the years, the United States has grown from a small colony to a great nation. It has fought wars, both with and without the world. It has made mistakes, but it has also made great achievements. The story of the United States is a story of hope and dreams. It is a story of a people who have built a nation that is free and just. The history of the United States is a story that we all share. It is a story that we should all know and understand.

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- Ephestiodes gilvescentella Rag. Granite, July 1935 (K.-Allen); Logan (K.-Sm.).
- Ephestia kuehniella Zel. Mediterranean flour moth, Logan (K.).
- Homoeosoma mucidellum Rag. Logan, July 27, 1937 and Moab, June 1935 (K.).
- Honora obsciurella Rag. Logan, June 24, 1936 (K.-Harmston).
- Hypsopygia costalis F. The clover hay worm, Hooper, July 7, 1937 (D. E. Hardy); Logan and Pleasant Grove, July 1937 (Knowlton).
- Jocara trabalis Grt. Logan, July, 1937 (K.); Oak Creek Canyon, June (Jeppson).
- Loxostege chortalis Grt. Logan, July 29, 1937 (Knowlton).
- L. comixtalis Wlk. Hooper, July 1, 1937 (K.-Dorst); Logan, July 1937 (K.).
- L. indentalis Grt. Kaysville, June 23, 1936 (K.); Syracuse, June 1937 (K.).
- L. similalis Gn. The garden webworm, Moab, July 25, 1938 (K.-Harmston).
- L. sticticalis L. The sugar-beet webworm, Clearfield, July 19, 1933 (K.); Syracuse, Tremonton, Vernal, Willard (K.). Causes serious damage to beets unless promptly controlled. Occasionally damages alfalfa and garden crops.
- Mineola scitulella Hulst. Logan, July 7, 1936 (Harmston).
- Noctuella rufofascialis Stph. Farmington, July 22, 1937 (K.-Harmston); Logan, July 25, 1937 (K.-Harmston).
- Nomophila noctuella D.-S. Logan, June 16, 1935 (Knowlton); Roosevelt, June 12, 1936 (Harmston); St. George, April 26, 1935 (Knowlton).
- Omatopteryx ocella Haw. Farmington, July 21, 1936 (F. H. Gunnell).
- Phlyctaenia rubigalis Gn. The celery or greenhouse leaf-tier, Logan, August 12, 1936 (Knowlton). Beets, cabbage, cauliflower, cucumber, lettuce, parsley, peas, rose and strawberry are also fed upon by this species.
- P. helvalis Wlk. Pleasant Grove, June 27, 1937 (K.-Hansen).
- Plodia interpunctella Hbn. Centerville, August 1938 (K.); Indian meal moth.
- Pyralis farinalis L. The meal snout moth infests cereal products. Farmington, June 8, 1935 (E. W. Anthon); Smithfield, June 19, 1926 (G. E. King).
- Pyrausta fodinalis Led. Logan, July 4, 1937 (Knowlton).
- P. nicolis Grt. Logan, June 27, 1937 (K.-Harmston).
- P. orphisalis Wlk. Logan, July 29, 1937 (Knowlton).
- P. subsequialis Gn. Hooper, August 27, 1937 (D. E. Hardy).
- Zophodia grossulariae Riley. Bountiful, May 20, 1929 (H. J. Pack).

Family GELECHIIDAE - Gelechiid Moths

- Anacamptis fragariella Busck. The western strawberry leafroller was found rolling strawberry leaves at Providence, June 13, 1934 (Knowlton-Smith); River Heights, July 12, 1935 (Smith).
- A. niveopulvella Chambers. Logan Canyon, July 11, 1937 (W. P. Nye).
- Anarsia lineatella Zell. The peach twig borer, Farmington, July 7, 1937 (F. H. Gunnell); Riverdale and Ogden, July 1939 (Knowlton-M. J. Janes). Larvae often parasitized by Copidosoma pyralidis Ashm.
- Gelechia pullella Busck. Logan, June 21, 1937 (Knowlton).
- Gnorimoschema lavernella Cham. Granite, July 21, 1935 (Knowlton-Allen).
- G. triocellella Cham. Logan, August 1, 1929 (H. J. Pack).
- Metzneria lappella L. Newton, July 16, 1929 (H. J. Pack).
- Phthorimaea operculella Zeller. The potato tuber moth was found in stored potatoes in some localities of Iron and Washington counties. Good cultural and marketing practices have made this a rare insect to find during the past three seasons.
- Recurvaria nanella Hub. The lesser bud moth, Bountiful, June 14, 1929 (Pack); Garland, June 11, 1924 (I. M. Hawley-Knowlton); Honeyville (Knowlton).
- Sitotraga cerealella Oliv. The angoumois grain moth occasionally attacks wheat and corn kernels in storage.

Family AEGERIIDAE 3/- Clear-Wing Moths

- Aegeria tibialis Harris. Larvae of the cottonwood crown borer attack poplars and willows. Beaver Valley, July (G. P. Engelhardt); Logan, June 29, 1929 (H. J. Pack).
- Conopia exitiosa Say. Farmington, August 5, 1936 (F. H. Gunnell).
- Mellitita gloriosa Hy. Edw. St. George, 1919.
- Paranthrene robiniae Hy. Edw. The locust clearwing, Logan, Salt Lake City.
- P. tricineta Har. Newton, June 2, 1918 (Engelhardt).
- Synathedon neglecta Hy. Edw. Paradise, July 24, 1929 (Pack).
- S. opalescens Hy. Edw. The pacific peach tree borer, Lehi, April 5 and July 9, 1906.
- S. rileyana Hy. Edw. Willard, August 8, 1910 (Engelhardt).
- S. rutilans Hy. Edw. The strawberry crown borer, Granite, June 13, 1936 (Knowlton-Allen), moderately abundant in strawberry patch.
- S. tipuliformis L. The imported currant borer was collected at Bountiful, June 6, 1929 (Pack); Logan, June 8, 1923 (K.), from cane of currant; River Heights (T. O. Thatcher). Occasionally this has been found to be a pest in northern Utah currant patches.

Family YPONOMEUTIDAE - Twig and Leaf Miners

- Argyresthia calliphanes Meyer. Logan Canyon, August 4, 1929 (H. J. Pack).
- Harpiteryx canariella Wals. Logan Canyon, August 10, 1935 (Knowlton).
- Plutella maculipennis Curtis. The diamond back moth, Cornish, June 19, 1929 (W. W. Henderson); Granite, July 16, 1935 (K.-Allen); Logan, July 30, 1929 (Knowlton); Mills and Newton, July 1929 (Knowlton). Damages cabbage and cauliflower. Sometimes beneficial by heavily attacking white-top and preventing the setting of seed. Breeds in abundance upon wild Cheirinia repanda and several other mustards throughout Utah.

Family EUCOSMIDAE

- Spilonota ocellana D.-S. The bud moth larvae were damaging one cherry orchard at Centerville, 1929 (H. J. Pack); American Fork, June 21, 1929 (Pack).
- Carpocapsa pomonella L. The codling moth repeatedly flew to light traps operated during the past two seasons in northern Utah. A parasite of this insect, (Ascogaster) was released in Cache County during the past season, through the cooperation of the U. S. Bureau of Entomology and Plant Quarantine.

Family TORTRICIDAE - Leaf Rollers

- Archips argyrospila Walk. The fruit-tree leafroller injures fruit and foliage of apples; currant, boxelder, gooseberry, Poplar, raspberry, rose and willow also may be attacked.
- Ablabia argentana Clerck. Granite, July 14, 1936 (M. W. Allen).
- Ancyliis comptana fragaria W.-R. Granite, July 25, 1935 (K.-Allen); rolling strawberry leaves at Hyrum, Providence and River Heights, June- August (Knowlton).
- Argyrotaenia dorsalana Dyar. Logan, July 31, 1937 (K.-W. P. Nye).
- Cacoecia conflictana Walk. Logan, July 6, 1937 (K.-Harmston).
- C. grisea Rob. Willard, July 11, 1930 (Knowlton).
- C. negundana Dyar. Centerville and Logan Canyon, on box elder (Knowlton).
- C. rosaceana Harr. Centerville, rolling boxelder leaves, July 11, 1930 (K.); Granite, June 16, 1936. (K.-Allen); Linden, Perry, Pleasant Grove and Tooele, May-July, 1936 (K.). Larvae infested dewberry fruits at Granite and Orem during recent seasons; beans, blackberry, strawberry, celery, currant, gooseberry, poplar, raspberry and rose are sometimes attacked.

- C. obsoletana Walk. Butlerville, June 11, 1934 (Knowlton).
C. semiferana negundana Dyar. Logan, August 4, 1929 (Pack); on boxelder foliage, Logan and Weber Canyons (Knowlton).
Clepsia viriescens Clem. Logan, June 28, 1935 (Knowlton).
Ecdytolopha insiticiaria Zell. Logan, June 20, 1937 (K.-Smith).
Epinotia misella Clerck. Farmington, July 18, 1936 (F.H.Gunnell).
Eucosma bobana Kear. Logan, June 23, 1936 (Knowlton).
E. bolanderana Hbn. Granite, June 14, 1936 (Allen).
E. canariensis Kft. Hooper, July 27, 1937 (D.E.Hardy).
E. corosana Wlsm. Farmington, July 1935; Granite, July 1936 (Allen).
E. costastriatula Kear. Granite, July 17, 1935 (K.-Allen).
E. crambitana Wlsm. Riverdale, Idaho, August 10, 1934 (C.F.Smith).
E. derelicta Hein. Logan, August 7, 1935 (K.-Smith).
E. perdricana Wlsm. Granite, July 25, 1935 (K.-Allen).
E. popana Kear. Logan, July 27, 1935 (Smith).
E. rorana Kear. Providence, July 29, 1935 (K.-Smith).
E. spaldingana Kear. Granite, July 24, 1935 (Allen).
Hedia ochroleucana Hbn. Granite, June 25, 1936 (Allen); Logan, 1937 (K.-H.).
Melissopus latiferreanus Wlsm. Granite, July 16, 1935 (K.-Allen).
Peronea nigrolinea Rob. Logan, 1937 (Knowlton).
Smicrotes peritana Clem. Hobbie Creek, June 1935 (K.); Providence, July (Knowlton-Smith).

Family TINEIDAE - Tineid Moths

- Acrolophus variabilis Walsingham. Logan, August 7, 1934 (C.J.Sorenson).
Scardia coloradella Dietz. Logan, August 27, 1936 (Knowlton).
Tineola biselliella Hum. Logan, February 22, 1930 (Knowlton), abundant in stored wool fleeces. Damage to wool clothing by this species and Tinea pellionella L. is reported from various parts of Utah each year.

Family COSSIDAE - Carpenter Moths

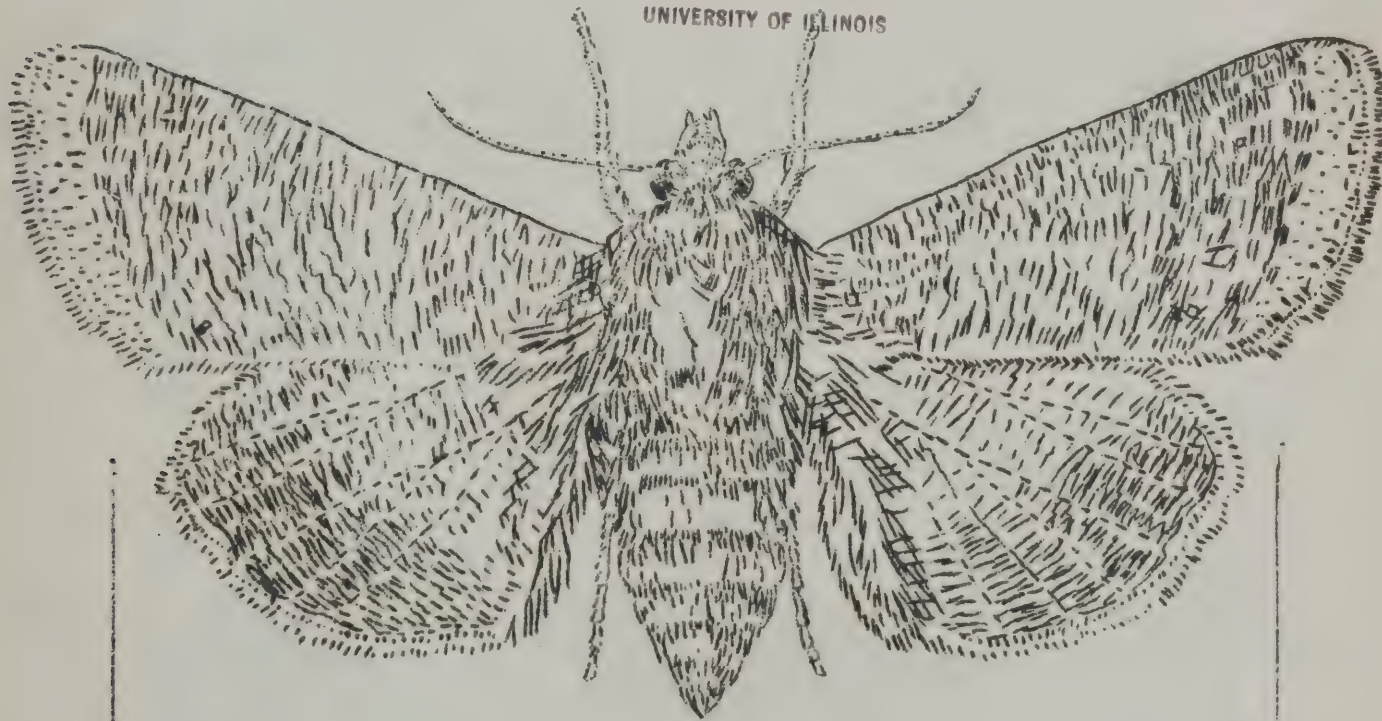
- Acossus centerensis (Lint). Ft. Duchesne, May 14, 1935 (F.C.Harmston).
Prionoxystus robiniae (Peck). The carpenter moth was collected at Granite, July 25, 1935, at light (K.-Allen); Hooper, July 4, 1936 at light (Knowlton), July 13, 1937 (D.E.Hardy) and July 1, 1937 (Dorst-Knowlton); Kayville, June 21, 1936, at light (Knowlton); Layton, June 19, 1936, at light (Knowlton); Pleasant Grove, July 6, 1937, at light (Knowlton-L.L.Hansen). Larvae of this pest attack poplars, elms, cottonwoods, ash, locust, willow, maple, apricot, pear and oak. Poplars were damaged severely by this pest at Lynndyl, July 1923 (Hawley-Knowlton).

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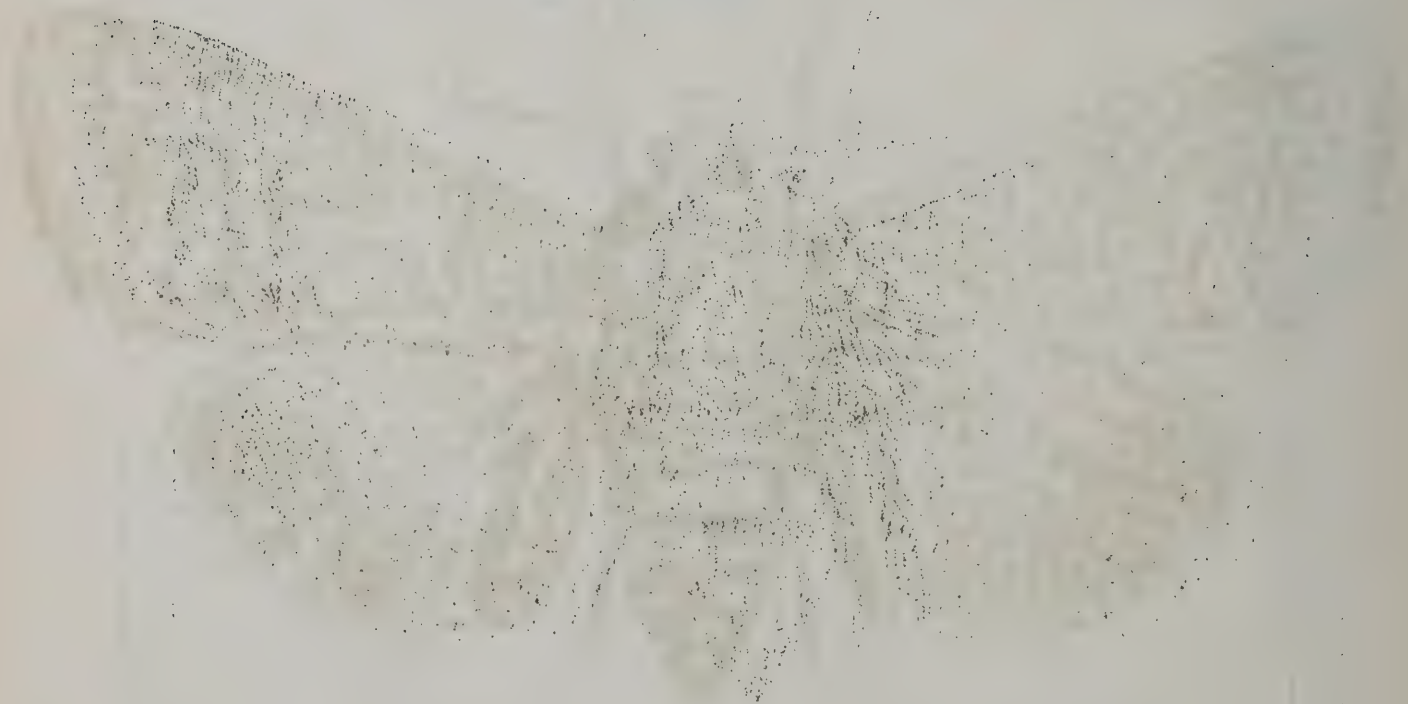
UNIVERSITY OF ILLINOIS



Corn Earworm Moth

Contribution from
The Department of Entomology
Utah Agricultural Experiment Station
Logan, Utah

1917



1917

1917

UTAH COLEOPTERA 1/
George F. Knowlton

Family CICINDELIDAE - Tiger Beetles

The tiger beetles are predatory, feeding largely upon other insects both as adults and larvae. In general this family should be considered as beneficial.

- Cicindela granica Schp. Logan, April 19, 1931 (W.L.Thomas); Logan Canyon (K.-T.O.Thatcher); Vernon (K.-C.F.Smith); Green Canyon (W.P.Nye); Trout Creek (Smith-Thatcher); Eden and Cowley Canyon (Knowlton); Roosevelt (F.C.Harmston); Strawberry (E.W.Anthon).
- C. purpurea audoboni Leng. Logan (T.O.Thatcher).
- C. lauta Csy. Corinne (Knowlton); Strawberry, August 1933 (Anthon).
- C. limbata amoena Lec. Strawberry Reservoir, September 1933 (E.W.Anthon).
- C. cinnamomea Lec. Strawberry Reservoir, September 1933 (E.W.Anthon).
- C. repanda Dej. Logan (W.L.Thomas).
- C. tenuicincta Blaisd. Logan, June 1933 (L.Green, Thomas); Bear River Bay (Knowlton).
- C. tranquebarica Hbst. Corinne, March 24, 1934 (K.-Thomas); Mills (K.); Leeton (H.); Ogden, May 18, 1927 (H.J.Pack); Grantsville (Knowlton).
- C. montana Lec. Ephraim, September 23, 1929 (H.J.Pack); Blind Hollow (R.E.Nye); Manila, August 11, 1937 (Harmston); Gusher; Eden (K.).
- C. oregona Lec. Strawberry Valley, July 3, 1933 (Anthon); Amalga (K.).
- C. echo Csy. Beaver, May 17, 1927 (Knowlton); Logan (L.Green); Hinckley (E.T.Jones); Stansbury Island (Pack-Hagen-Titus); Calleo (Spalding).
- C. scutellaris unicolor Dej. Park Valley (R.Roskelley).
- C. sexguttata Fab. Iosepa (Thatcher); Park Valley (Roskelley).
- C. punctulata Oliv. Ft. Duchesne, August 14, 1937 (Knowlton); Indian Canyon (C.J.Sorenson), Tintic (H.R.Hagen).
- C. punctulata chihuahuae Bates. Farmington (Knowlton); Greendale (K.-Harmston); Heber; Roosevelt; Price (W.W.Henderson); Parowan Canyon (Spalding); San Rafael Bridge, September 1937 (W.P.Nye).
- C. oregona Lec. Blacksmith Fork Canyon (Knowlton); Bluebell, Vernon and Leota (Harmston); Ogden (C.J.Davis-K.); Logan (E.Gardner); Vernon Creek (K.-Smith-A.Levi); Lehi (E.G.Titus); Spring Canyon (H. Armstrong); Green Canyon (R.E.Nye); Paradise (K.); Syracuse (Thatcher); American Fork (H.F.Thornley); Strawberry Valley (Anthon).
- C. carthagera Dej. Farmington (M.J.Janes); Grantsville and Dolomite (K.-Jones); Syracuse (T.O.Thatcher).
- C. carthagera arizonae Wickh. Leeds (Knowlton); St. George (Knuss).
- C. pusilla imperfecta Lec. Bluebell and Leota (Harmston); Logan, Mills Junction, Iosepa, Penrose, Benson, Appledale, Salim, Orr's Ranch, Lakepoint and Lyndyl (Knowlton); Skull Valley (D.M.Hammond, C.F. Smith-K.); Spanish Fork (W.L.Thomas); Iosepa (M.F.Bowen); Farmington (M.J.Janes).
- C. pusilla cinctipennis Lec. Amalga, June 16, 1937 (Smith-W.P.Nye); Ft. Duchesne (F.K.Stoffers, R.L.Janes, L.Cutler); Iola, Vernal and Roosevelt (F.C.Harmston); Iosepa (K.-Bowen); Timpie, Benson and Orr's Ranch (Knowlton).

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- C. californica praetextata Lec. Washington (Knowlton-Smith).
C. cuprescens Lec. Ft. Duchesne (F.K.Stoffers); Logan Canyon (Harmston);
San Rafael Indian Writings, September 10, 1937 (W.P.Nye).

Family CARABIDAE - Ground Beetles

- Carabus taedatus Fab. Logan, April 10, 1931 (W.L.Thomas).
Calosoma triste Lec. Ft. Duchesne, August 1932 (F.K.Stoffers).
C. obscurum Say. Ft. Duchesne, July 11, 1932 (C.J.Sorenson); Jordan
Narrows, June 5, 1935 (R.C.Roskelley).
C. calidum Fab. Ft. Duchesne, June 10, 1930 (R.L.Janes), 1932 (Stoffers).
C. tepidum Lec. Logan, June 17, 1931 (W.L.Thomas).
C. cancellatum Esch. Ephraim; Monroe, June 30, 1936 (Knowlton-E. G. Titus);
Oak City (C. J. Sorenson); Trenton, August 8, 1931 (D. M. Hammond);
Trout Creek, May 7, 1934 (J. A. Meacham).
Callisthenes luxatus (Say). Blue Creek, West Jensen, Penrose, Snowville
(Knowlton); Logan (Stoffers); Salt Lake, Woods Cross (E. G. Titus).
Also Malad, Idaho (K.).
Elaphrus lecontei Cr. Corinne, May (Knowlton-Thomas).
E. riparius L. Blacksmith Fork Canyon, June 1936 (Harmston).
Opisthius richardsoni Kby. Logan, June 1936 (Harmston).
Dyschirus salivagans Lec. Hooper, June 25, 1936 (Knowlton).
Bembidion bifossulatum (Lec.). Logan, May 1933 (Thatcher).
B. iridescens (Lec.) Logan, October 1933 (T. O. Thatcher).
B. transversale Dej. Strawberry Valley, August 1933 (E. W. Anthon).
B. striola Lec. Kayville (Knowlton); Jordan Narrows (Roskelley).
B. lucidum (Lec.). Curren Creek and Snowville, April 1933 (Knowlton).
B. fuscicrum Mots. Clinton and Kayville, June 1936 (Knowlton).
B. variegatum Lec. Kayville, June 24, 1936 (Knowlton).
Pogonistes planatus Horn. Logan (L. Cutler); Monument (W. L. Thomas).
Pterostichus (Poecilus) scitulus Lec. Bothwell, June 18, 1936 (Knowlton);
Ft. Duchesne (L. Cutler); Providence 1932 (D. M. Hammond).
Platynus placidus (Lec.). Granite, June 1936 (M. W. Allen).
P. viridissimus Csy. Logan (Anthon); Park Valley (Roskelley).
P. luxatus Csy. Logan, Providence and Salt Lake City (Knowlton).
Lebia atriceps Lec. Farmington and Spanish Fork (Knowlton).
L. viridis Say. Penrose, July 30, 1929 (Knowlton).
Axinopalpus biplagiatus (Dej.). Benson, February (Thatcher).
Tecnophilus croceicollis (Men.). Evans and Showell (Knowlton).
Philophaga uteana Csy. Logan, April 1931 (W. L. Thomas); Snowville,
Soldier Summit and Trenton, 1933-1935 (Knowlton).
Cyminidius evanescens Csy. Snowville (Cutler); Vernon (Knowlton).
Chlaenius pennsylvanicus Say. American Fork and Garland, August (Knowlton);
Logan, April 12, 1936 (C. J. Davis).
C. tricolor Dej. Logan, April 1, 1934 (Elden Gardner).
C. sericeus Forst. American Fork (K.); Logan, November (Thomas).
Harpalus caliginosus (Fab.) Beaver and Madsen, April 1933 (Knowlton);
Bountiful (H. J. Pack); Logan, June 1931 (J. H. Linford, W. L.
Thomas).
H. amputatus Say. Beaver, Copperton, Lampo, Snowville, and Timpie
(Knowlton); Stansbury Island (Pack-Hagen-Titus); Farr West (Knowlton).
H. pennsylvanicus Say. Hinckley (E. T. Jones); Logan (H. J. Pack).
H. fraternus Lec. Hunter and Keisor (Knowlton); Trout Creek (Stafford).
H. oblongus Csy. Snowville, April 18, 1933 (Knowlton).
Discoderus amicus Lec. Stansbury Island, July 13, 1913 (Pack-Hagen-
Titus).
Anadaptus nivalis (Horn). Ephraim, August 10, 1904.
Stenocollus congener (Lec.). Logan, June 1931 (E. Gardner).

Family HALIPLIDAE

Peltodytes callosus (Lec.). Grantsville, Skull Valley and Logan Canyon 1934 (Knowlton); Farmington 1934 (W.L.Thomas).

Family DYTISCIDAE - Predacious Water Beetles

- Laccophilus decipiens Lec. American Fork, Grantsville, Lehi, Skull Valley and Wellsville (Knowlton); Clinton (R.C.Roskelley).
L. mexicanus Aube. Locomotive Springs, 1930 (Knowlton).
Deronectes griseostriatus (DeG.). Benson, Farr West, Logan, 1932-1934 (Knowlton); Provo (B.G.Whitaker).
D. striatellus (Lec.). Farmington and Logan (W.L.Thomas).
Hydrotus impressopunctatus Sch. Brigham, Farmington, July 5, 1936, Provo and Spanish Fork (Knowlton).
H. punctatus Say. American Fork, May 1930 (Knowlton).
Agabus lugens (Lec.). Ash Creek, Washington County (Knowlton).
A. disinterratus (Cr.). Grantsville, April 27, 1930 (Knowlton).
A. obliteratus (Lec.). Farmington, February 13, 1934 (Knowlton); Hyde Park, April 1930 and Logan, May 1932 (Knowlton).
A. griseipennis (Lec.). Farr West, February 2, 1934 (W.L.Thomas); Grantsville, April 27, 1930 and Skull Valley 1930 (Knowlton).
A. strigulosus (Cr.). Logan, May 29, 1933 (T.O.Thatcher).
A. austini Shp. Farr West, February 7, 1934 (W.L.Thomas).
A. tristis Aube. Logan, September 1937 (E.E.Ivce); Hyde Park (Knowlton).
Oreodytes obesus Lec. Logan, July 1933 (T.O.Thatcher).
O. semiclaris Fall. (?) Logan, June 2, 1931 (W.L.Thomas).
Rantus hompieri Wallis. Logan, November 5, 1932 and Wellsville, 1934 (Knowlton); Strawberry Valley, August 1933 (E.W.Anthon).
Colymbetes ruginervis Shp. Logan (Thatcher); Newton (L.F.Clark).
Acilius semisulcatus Aube. Hyde Park, June 6, 1938 and Logan, October 1926 (Knowlton); Ft. Duchesne, 1932 (F.K.Stoffers).
Thermonectes basilaris (Harr.). American Fork, Farmington and Spanish Fork, August 11-26, 1936 (Knowlton).
T. basilaris intermedius Cr. American Fork and Spanish Fork (Knowlton).

Family GYRINIDAE - Whirligig Beetles

- Gyrinus consobrinus Lec. Benson and Skull Valley, April 1930 (Knowlton); Logan, September 1933 (W.W.Henderson).
G. affinis Aube. Hyde Park and Logan, April-June (Knowlton).
G. picipes Aube. Benson and Logan, April 1930 (Knowlton).
G. bifarius Fall. Amman, July 3, 1934 (Knowlton-M.J.Janes); Corinne and Farmington (Knowlton); Hinckley, 1914 (E.W.Jones).

Family HYDROPHIDIDAE - Water Scavenger Beetles

- Hydrobius fuscipes L. American Fork, Spanish Fork and Keyville, June-July 1936 (Knowlton); Park Valley (R.C.Roskelley).
Enochrus corinatus (Lec.). Logan, August 1934 (F.H.Gunnell).
E. californicus (Horn). Brigham, July 1934 (Knowlton-Smith).
E. hamiltoni (Horn). American Fork, 1930 (Knowlton); Farmington, Brigham and Spanish Fork, June-September 1936 (Knowlton).
Paracynus subcupressus (Say). Benson, June 28, 1938 (Knowlton-G.S.Stains); Brigham, June 17, 1938 (Knowlton).
Sphaeridium scarabaeoides (L.). Snowville, June 17, 1932, and Junib (Knowlton-M.J.Janes); Hyde Park (D.E.Hardy-Stains); Logan (Knowlton).
S. bipustulatum Fabr. Providence, 1933 (Knowlton).

Cercyon kulzeri Rnish. Evanston, Wyoming 1938 (K.-F.C.Harmston).

Family SILPHIDAE - Carrion Beetles

Silpha lapponica Hbst. Park Valley, 1934 (R.C.Roskelley).

S. bituberosa Lec. Vernon, May 1, 1936 (Knowlton-C.F.Smith).

Family STAPHYLINIDAE - Rove Beetles

Paederillus nevadensis (Aust.). Farr West, February 1934 (Thomas).

Philonthus occidentalis Horn. Corinne, March 1934 (Thomas).

Staphylinus nigrellus Horn. Logan, 1932 (B.G.Whitaker).

Ocypus ater (Grav.). Logan, 1923 (B.G.Whitaker).

Family HISTERIDAE - Hister Beetles

Hister semiruber Csy. Ft. Duchesne, 1932 (F.K.Stoffers); Lohi, 1929 (H.J.Pack); Logan (R.E.Nye); Park Valley (R.C.Roskelley). Also Riverdale, Idaho, April 22, 1934 (C.F.Smith).

H. solaris Carn. Logan, June 27, 1935 (J.A.Rowe); Park Valley, 1934 (Roskelley); Snowville (L.Cutler); Trenton (Smith-J.A.Rowe).

H. plute Csy. Lewiston, August 1932 (Knowlton). Also Franklin, Idaho (Rowe).

Platysoma lecontei Mar. Logan, April 1931 (W.L.Thomas).

Paromolus aequalis Say. Geneva, June 7, 1934 and Trenton, July 25, 1935 (Knowlton); Stansbury Island, 1913 (E.G.Titus).

Saprimus discoidalis Lec. Lamo, July 19, 1934 (Knowlton); Trout Creek, July 25, 1933 (H.B.Stafford).

S. latiformis Csy. Logan, May 13, 1932 (F.K.Stoffers).

S. lugens Er. Blacksmith Fork Canyon (Thatcher); Blue Creek, April 27, 1930 (Knowlton); Logan (R.E.Nye); Park Valley (R.C.Roskelley); Stansbury Island, July 25, 1933 (Stafford); Trout Creek (E.Gardner). Also Riverdale, Idaho (C.F.Smith).

S. oregonensis Lec. Snowville, June 1, 1933 (Knowlton); Trout Creek, July 25, 1933 (H.B.Stafford).

S. estriatus Lec. Stansbury Island, 1913 (E.G.Titus).

Family CANTHARIDAE - Leather Winged Beetles

Podabrus comes Lec. Logan Canyon, 1934 (T.O.Thatcher).

Silis difficilis Lec. Logan Canyon, July 1937 (R.E.Nye).

Family MELYRIDAE - Soft Winged Flower Beetles

Collops bipunctatus Say. Reportedly feeds on the larvae of the alfalfa weevil in Utah; Logan, Ogden (Knowlton).

Family CLERIDAE - Checkered Beetles

Thanasimus nigriventris Lec. Beaver Creek, Logan Canyon, August 29, 1937 and Smithfield Canyon (C.J.Davis). In Idaho along Beaver Creek (Davis).

Enoclerus eximius Mann. Logan, 1933 (J.H.Linford).

E. noestus Klug. Altonah, July 5, 1938 (Knowlton-F.C.Harmston); Beaver Creek, Logan Canyon, August 29, 1937 (C.J.Davis).

E. sphageus Fab. Logan Canyon, August 1937 (C.J.Davis). Also Minidoka National Forest, Idaho, May 1936 (T.O.Thatcher).

E. abruptus Lec. Cedar Valley, August 24, 1932 (Knowlton).

Trichodes simulator Horn. Roosevelt, August 10, 1935 (Harmston); Woodside, September 4, 1937 (Knowlton).

T. ornatus Say. Logan (Witaker); Smithfield, (Smith-Harmston).
Hydnocera humeralis difficilis Lec. Logan Canyon, 1938 (W.P.Nye).
H. scabra Lec. Farmington (Gunnell); Snowville, 1930 (Knowlton).

Family CEPHALOIDAE

Cephaloon tenuicorne Lec. Logan Canyon, May 24, 1934 (Knowlton).

Family OEDEMERIDAE

Calopus angustus Lec. Logan (Thatcher); Whiterocks (Harmston).
Onaxis sororia Horn. Farmington, July 1936 (Knowlton, Gunnell); Hooper, Pleasant Grove and Spanish Fork (Knowlton).
O. cana (Lec.). St. George, July 9, 1934 (Knowlton); Zion National Park, July 6, 1924 (W.W.Henderson).
O. bicolor (Lec.). Providence, August 1934 (C.F.Smith).

Family RHIPHORIDAE

Macrosiagon cruentum (Germ). Indian Bench, Neola and Whiterocks, in Uinta Basin, June and September, 1936 (F.C.Harmston).
M. limbatum (Fab.). Nephi Bench, Duchesne County, 1936 (Harmston).
Rhipiphorus mutchleri Rivnay. Bear River City, July 29, 1937 and Roosevelt (Knowlton-Harmston); Logan (C.F.Smith-Harmston).

Family MELOIDAE - Blister Beetles

Pyrota mylabrina Chev. Randlett, June 29, 1934 and Whiterocks, 1935 (Harmston); Spanish Fork, August 1936 (Knowlton).
P. engelmanni (Lec.). Moab, August 10, 1926.
Epicauta puncticollis (Mann.). Logan (Thomas); Sardine Canyon, Providence, Petersburg (Knowlton); Watson, 1934 (Harmston). Sometimes attacks flowers, potatoes and beans.
E. ferruginea (Say). Blue Creek, Bountiful, Ephraim, Parley's Canyon, Providence and Logan (Knowlton); Altonah, Bennett, Duchesne, Myton, Randlett and Neola (Harmston).
E. pruinosa Lec. Indian Canyon, June 12, 1933 (Knowlton).
E. maculata Say. The spotted blister beetle damages young beets, beans, potatoes and at times other crops in Utah, being widely distributed.
E. pennsylvanica DeG. Logan, July 1, 1936 (Harmston); Smithfield and Mantua (Knowlton). This black beetle at times damages alfalfa blossoms and other crops.
Lepta cooperi Lec. Howell, August 17, 1931 (Knowlton-M.J.Janes); Ft. Duchesne, 1933 (C.J.Sorenson); Myton, Roosevelt and Watson (H.).
L. nuttalli Say. Duchesne, Fruitland, July 1935 and Logan (Harmston).
L. cyanipennis Lec. Fish Lake, mountains S. W. of Woodruff (Knowlton).
L. sphaericollis Say. Brigham Canyon, August 1930 (K.-Janes); Logan (H.).
L. compressicornis Horn. Trout Creek, May 1934 (T.O.Thatcher).
Meloe ater Bland. Logan, May 7, 1934 (E.Gardner).
M. opacus Lec. Park Valley, April 1932 (R.C.Roskelley).
Zonitis flavida Lec. Currant Creek and Wolf Creek Pass (Harmston); Ogden, Josepa, Mosida and Promontory (Knowlton); Lewiston. (Thatcher-Knowlton).
Z. bilineata Say. Ioka, La Point, Myton, Randlett and Roosevelt (H.).
Gnathium nitidum Horn. Moab, August 19, 1936 (Knowlton).
Nemognatha lutea Lec. Logan, July 30, 1936 (Knowlton); Logan Canyon (Harmston); Strawberry Valley (E.W.Anthon).
N. scutellaris Lec. Park Valley, April 1934 (R.C.Roskelley).
Tricraniodes stansburyi (Hald.). Beaver Dam, Garland and Logan (Knowlton);

THE [illegible] OF [illegible]

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Neola, July 1935 (Harmston).
Brachyspasta wickhami VanD. Uintah Canyon, June 15, 1936 (F.C.Harmston).
Cordylospasta fulleri Horn. Beaver Dam, Arizona, 1934 (L. Stevens).
Macrobasis albila (Say). Myton, June 25, 1935 (Harmston).
M. unicolor (Kby). The ash-gray blister beetle is often encountered upon alfalfa, beets and various plants in the garden. Collected at Santaquin, McIntyre, Lyndyl, Roosevelt, Ft. Duchesne, Spanish Fork and Gunnison (Knowlton); Granite (M.W.Allen); Price (F.C.Harmston).
Negetra vittata Lec. Salt Lake City, July 1923 (Knowlton).

Family PEDILIDAE

Stereosolopus guttatus Lec. Jordan Narrows, July 1935 (Roskelley).
S. incanus Csy. Logan Canyon, July 4, 1936 (F.C.Harmston).
Mastoremus longicornis Csy. Northern Utah (Knowlton).

Family ANTHICIDAE - Ant-Like Flower Beetles

Motoxus schwarzi Horn. Garland, June 30, 1932 (M.J.Janes).
M. nuperus Horn. Farr West, June 29, 1929, and Indian Creek, 1932 (K.).
M. anchora Hentz. Ft. Duchesne, July 11, 1932 (Knowlton).
M. robustus Casy. Joseph, July 9, 1932 (Knowlton-M.J.Janes).
M. calcaratus Horn. Hooper, July 28, 1938 (K.); Plain City, July 1930 (K.-Janes); West Weber, July 15, 1929 (Knowlton).
Anthicus biguthulus Lec. Blue Creek, April 21, 1930 (Knowlton).

Family PLASTOCERIDAE

Aplastus tenuiformis Horn. Morrisy, July 8, 1932 (Knowlton).
A. cylindricus Van D. Lehi, June 30, 1936, and Spanish Fork (Knowlton); Roosevelt, 1937 (K.-Harmston).

Family ELATERIDAE - Wireworms, Click Beetles

This large family contains many injurious species; both larvae and adults in some species cause crop injury.

Adelocera rosulenta Lec. Logan Canyon, June 21, 1936 (R.E.Mye).
A. profusa Gmd. Logan, June 19, 1931 (J.H.Linford); Cache National Forest, June 1932 (G.Van Buren). Also Cody, Wyoming, July 1935 (W.L.Thomas).
Laeon discoides Web. Kamas, June 24, 1936 (F.C.Harmston).
L. profusus Gmd. Thistle, September 15, 1935 (Harmston-Knowlton).
Aeolus dorsalis (Say.). American Fork and Green River, August 1936 (Knowlton); Ft. Duchesne, October 1936 (K.); Layton, April 1935 (K.-Smith); Logan, April and June 1934 (E. Gardner); Logan, May 1935 (R.E.Mye); Mantua, June (K.); Mt. Sterling, August 1937 (K.); Paradise (O.S.Lee); Providence, March and July (Knowlton-Smith); Provo, April 1935 (K.-Thomas); Santa Clara, June 16, 1935 (C.J. Sorenson); and Vernal, June 28, 1938 (K.-Harmston).
A. marginicollis Horn. Roosevelt, June 1937 (K.-Harmston); Green River, (Knowlton-Harmston).
A. mellillus Say. var. near marginicollis Horn. Logan, August 1933 (J.A. Neacham) and May 1934 (Smith); M.roni, June 1937 (L.L.Hansen); Providence, August 1938 (R.L.Janes).
Limonius auripilis (Say.). Logan, July 10, 1936 (F.C.Harmston).
L. infuscatus Mots. Adults of this injurious species were collected at Benson, April 20, 1935 (F.H.Gunnell); Cornish, May 1936 (K.); Farmington, April (Gunnell); Logan, April 1935 (R.E.Mye); Plain City, April (K.); Providence, (Smith-Thomas); Springville, May (E.W.Anthon);

- Uinta (Knowlton). Also Ft. Bridger, Wyoming, August 10, 1937 (K.-Harmston). Wireworms of this species damage potatoes, young sugar-beets, beans, corn, and other truck and flower garden plants.
- L. californicus Mann. Amalga, June 1937 (K.); Park Valley, March (Roskelley).
- L. nitidulus Horn. Logan Canyon, September 1, 1936 (R.E.Nye).
- Athous rufiventris Esch. Logan Canyon, September 1, 1937 (Harmston).
Also Cody, Wyoming, July 1, 1937 (W.L.Thomas).
- A. nigripilis Mots. Farmington, July 17, 1937 (Knowlton); Hooper, July 4, 1936 (K.); Oak Creek Canyon, August 9, 1937 (Jeppson); Roosevelt, June 27, 1937 (Harmston); Spanish Fork, August 14, 1936 (Knowlton).
- A. pallidinervis Mann. Blacksmith Fork Canyon, June 20, 1937 (K.-Harmston); Huntsville, June 29, 1938 (Knowlton-Hardy); Logan Canyon, July 5, 1935 (Knowlton).
- Ludius resplendens breweri (Horn). Logan, July 11, 1933 (L. Green); Logan Canyon, July 1935 (W.P.Nye). Also Custer, Idaho, July 20, 1935 (A.D.Smith).
- L. furtivus (Lec.). Logan Canyon, April 29, 1934 (Thatcher).
- L. volitans (Esch.). Brigham, June 14, 1936 and Logan, September 1, 1936 (Knowlton); Logan Canyon, April 29, 1934 (Thatcher).
- L. unbricola (Esch.). Logan, June 17, 1932 (J.H.Linford).
- L. morulus (Lec.). Logan Canyon, June 29, 1935 (Gunnell).
- L. nigricollis (Blair.). Minidoka National Forest, Idaho, May 1936, (Thatcher).
- L. nebraskensis (Blair.). Logan Canyon, August 15, 1938 (W.P.Nye); Monticello, June 18, 1935 (Knowlton).
- L. fallax (Say). Logan Canyon, June 8, 1935 (Smith-Thatcher).
- L. bombycinus (Germ.). American Fork, July 24, 1936 (H.F.Thornley); Blacksmith Fork Canyon, June 1937 (K.-Harmston); Logan Canyon, June 1936 (R.E.Nye) and May (Thatcher); Logan April 15, 1931 (Thomas); Roosevelt, August 1937 and Wellsville, June 1937 (Harmston).
- L. leucaspis (Germ.). Logan Canyon, June 1937 (R.E.Nye) and May (Knowlton-Thatcher).
- L. aeripennis (Kirby). Logan, July 1933 (L.Green). Also Gray, Idaho 1937 (R.E.Nye).
- L. aeripennis aeripennis (Kby.). Logan, May 1931 (K.) and April 1934 (Gardner).
- L. aeripennis destructor Br. Logan, June 1, 1931 (Thomas).
- L. glaucus Germ. Blue Creek, June 7, 1930 (K.); Bountiful, April 1929 (Pack).
- L. inflatus (Say.). Blue Creek (K.); Cache Junction, June 11, 1912 (Hagan); Eden, June 1938 (K.); Logan, July 1936 (Harmston); Mantua, June 1937 (K.); Roosevelt, August 11, 1937 (K.-F.C.H.); Sardine Canyon, June 26, 1929 (Pack). Larvae of the inflated wireworm attack potatoes, wheat, corn, barley and oats. Adults often collected on wild and cultivated rose bushes.
- L. carbo (Lec.). Granite, June 29, 1937 (K.); La Point, June 12, 1935 (Harmston); Logan, July 1, 1933 (L.Green); Ogden, July 6, 1937 (Hardy).
- L. breweri Horn. Minidoka National Forest, Idaho, 1937 (Thatcher).
- L. conjungens (Lec.). Blacksmith Fork Canyon, May 12, 1927 (K.); Logan, April 21, 1935 (R.E.Nye).
- L. rotundicollis (Say.). Logan Canyon, September 30, 1934 (T.C.Thatcher).
- L. hieroglyphicus (Say). Dry Canyon, June 9, 1935 (T.O.T.); Logan (Knowlton). Reportedly attacks apple buds in British Columbia.
- L. semimetallicus (Walk.). Logan Canyon, May 1933 (Thatcher, Knowlton).
- L. callidus Brown. Blacksmith Fork Canyon, June 20, 1937 (K.-Harmston).
- L. pruinus Horn. Roosevelt, September 15, 1936 (F.C.Harmston).
- L. pudicus Brown. Blacksmith Fork Canyon (K.-Harmston); Logan, August 3, 1936 (K.-Harmston); Whiterocks, September 19, 1936 (F.C.Harmston).
- L. silvaticus Van Dyke. New Meadows, Idaho, June 12, 1936 (T.O.Thatcher).

- Hemicrepidius carbonatus Lec. Amalgam, July 11, 1937 (Knowlton); Huntsville, June 27, 1937 (K.); Logan, July 30, 1936 (K.); Syracuse, July 19, 1936 (Knowlton).
- H. memnonius (Hbst.). Farmington, August 5, 1937 (K.-Dorst); Oak Creek, August 7, 1937 (Jeppson); Trout Creek, July 25, 1937 (H.B.Stafford).
- Hypocidus funebris Cand. Logan, July 1937 (Harmston). Also Evanston, Wyoming, (R.E.Nye).
- Dolopius lateralis Esch. Potato wireworm adults were collected at Farmington and Lehi, June 1935 (Knowlton); Lewiston, June 1935 (J.A.Rowe); Logan Canyon, May (K.); Logan, March and May (T.O.T.); and April (K.); Lindon, July 16, 1937 (K.); Ogden, April 20, 1935 (K.); Providence, June 8, 1930 (M.J.James); River Heights and Salem, June (K.); Salt Lake City, May 1935 (K.); Soldier Summit, June 1933 (K.); Strawberry Valley, August 29, 1934 (Anthon); Thistle, June (Knowlton). The larvae often attack potatoes and wireworm injury to this crop sometimes becomes serious in Utah.
- D. improbadus Br. Bountiful, May 15, 1929 (Pack); Charleston, July 1938 (K.-Harmston); Logan, April 1930 (K.); Logan Canyon, April 1934 (Thatcher); Mantua, June 1929 (Knowlton); Smithfield, July 1937 (Smith-Harmston).
- D. lutulentus Grown. Ogden, June 27, 1937 (D.E.Hardy).
- D. nigrabilis Brown. Logan, June 27, 1937 (W.P.Nye).
- D. spretus Brown. Logan, June 1933 (Thatcher); Thistle (Knowlton).
- D. vetulus Brown. Logan Canyon, June 26, 1938 (W.P.Nye).
- Agriotes ferrugineipennis Lec. Logan, July (Knowlton) and June 1931 (Thomas); Logan Canyon, June 1935 (R.E.Nye); Morgan, June and Newton, July, 1927 (Knowlton).
- A. imperfectus Lec. Huntsville and Vernal, June 1937 (K.-Harmston).
- A. opaculus Lec. Logan Canyon, June 13, 1937 (W.P.Nye).
- A. cridallie Vand. Eden, May 25, 1937 (Knowlton).
- Merapenthes tartarius (Lec.). Logan Canyon, June 20, 1937 (R.E.Nye).
- Melanotus texanus Cand. Green Canyon Cache Co., July 4, 1935 (R.E.Nye).
- M. oregonensis Lec. Farmington, June 8, 1935 (Anthon); Granite, Hyde Park and Kayville, June (Knowlton); Logan, (R.E.Nye); Oak Creek Canyon, July 9, 1937 (Jeppson); Paradise (O.S.Lee); Sandy, August, Spanish Fork, and Syracuse, July 1937 (Knowlton).
- M. exuberans Lec. American Fork, July 8, 1936 (Knowlton); Logan, July 2, 1937 (Harmston); Spanish Fork, July 21, 1936 (Knowlton).
- Cardiophorus amplicollis Mots. Farmington, June 18, 1935 (Anthon-Gunnell); Pleasant Grove, June 7, 1935 (Anthon).
- C. fenestratus Lec. Castle Gate, June 20, 1933 (Knowlton). Also Cody, Wyoming, July 26, 1935 (Thomas). Adult beetles sometimes attack buds and blossoms of fruit trees.
- C. tumidicollis Lec. Taylor, May 23, 1933 (Knowlton).
- C. longior Lec. Logan, April 30, 1937 (R.E.Nye).
- C. edwardsi Horn. Logan, May 15, 1936 (Knowlton).
- E. tenebrosus Lec. Blacksmith Fork Canyon, June 4, 1935 (Thatcher); Fruitland, April 27, 1933 (K.); Logan Canyon (Thatcher); Logan, April and June (R.E.Nye-Thatcher).
- C. pubescens Bl. Logan Canyon, June (R.E.Nye); Vernon Creek, May (K.).
- C. orinitus Bl. Logan Canyon, May 3, 1937 (R.E.Nye); Sardine Canyon, June 3, 1937 (Knowlton-Harmston).
- Ampedus (Elatar) hoppingi Vand. Logan Canyon, August 1, 1937 (K.-C.J.Davis). Also Yellowstone Lake, Wyoming, July 18, 1936 (K.).
- A. horni Cand. Hooper, June 27, 1937 (Hardy).
- A. moerens Lec. Miniloka National Forest, Idaho, May 1936 (Thatcher).
- A. oregonus Schfr. Logan Canyon, June 6, 1936 (R.E.Nye).
- A. rhodopus Lec. Peterson, June 17, 1937 (C.J.Davis).
- A. rutriventris Lec. Jordan Narrows, June (Roskelley).

Family DERMESTIDAE - Larder Beetles

Dermestes maculatus Say. The common carrion dermestid is frequently encountered in Utah. Jordan Narrows, Park Valley (Roskelley).

D. fritchii Kug. Logan, June 18, 1936 (W. L. Thomas).

D. lardarius L. The larder beetle occasionally is a pest in homes.

Attareus picus Oliv. Logan (J. A. Meachan); Monroe 1936 (Knowlton).

Anthrenus scrophulariae (L.). The buffalo carpet beetle at times attacks rugs, dried insects in museums, feather pillow and hair products.

Family OSTOMIDAE - Grain and Bark Gnawing Beetles

Temnochila prosternalis Schaeff. Logan, September 29, 1929 (Knowlton); Arcadia and Whiterocks, 1935 (F. C. Harmston).

T. mauritanicus (L.). The cadelle larvae and adults have been found in wheat and cereal products at Logan, Ogden, Castledale, Salt Lake City, and other localities in Utah. Occasionally a serious pest.

Family NITIDULIDAE - Sap Feeding and Dried Fruit Beetles

Meligethes rufinanus Loc. Ogden, August 9, 1933 (Knowlton).

Nitidula ziczac Say. Green River, June 18, 1933 (Knowlton).

Lobiopa undulata (Say). Logan, August 8, 1933 (T. O. Thatcher).

Urophorus humeralis (Fab.). Larvae and adults were heavily infesting sweet corn growing in the field at Moab, July 28, 1938 (Knowlton-Harmston). This injury was called to the writer's attention during 1936 and 1937 at Moab by County Agricultural Agent J. H. Parrish.

Glischrochilus quadrisignatus quadrisignatus Say. Honeyville, September 17, 1929 (Knowlton); Logan, August (W. L. Thomas); Providence (D. M. Hammond). (Det. C. T. Parsons).

G. quadrisignatus canadensis Brown. Collected on beets at Thatcher, July 12, 1930 (Knowlton) (Det. C. T. Parsons).

Family - CUCUJIDAE - Flat Barkbeetles

Oryzaephilus surinamensis (L.). The saw-toothed grain beetle frequently is a pest of stored cereals, invading homes as well as granaries throughout Utah.

Cathartus advena (Waltl.). Logan, September 1929 (Pack).

Cucujus clavipes puniceus Mann. The red flat barkbeetles live under bark of injured or dying trees, being predacious upon wood borers and bark beetles. Logan 1923 (Knowlton) and April 22, 1931 (W. L. Thomas).

Brontes dubius Fab. Logan, April 14, 1936 (P. T. Rigby).

B. dubius truncatus Mots. Logan, May 1933 (Thatcher).

Family EROTYLIDAE - Pleasing Fungus Beetles

Dacne uteana Gsy. Garland, August 1921 (G. E. King).

Family CRYPTOPHAGIDAE - Silken Fungus Beetles

Cryptophagus maximus Blake. On alpine fir, Card Canyon of Logan, Canyon, August 15, 1937 (W. P. Nye).

Family COLYDIIDAE -- Cylindrical Barkbeetles

- Lasconotus complex Lec. On alpine fir, Card Canyon of Logan Canyon, October 1936, July and August 1937 (W. P. Nye).
L. planipennis Kraus. Logan Canyon, on Pinus contorta, October 21, 1934 (T. O. Thatcher).

Family PHALACRIDAE

- Phalacrus simplex Lec. Cache Junction, September 1913 (Hagen); Hooper, May 6, 1930 (Knowlton); Logan (W. L. Thomas).

Family COCCINELLIDAE -- Ladybird Beetles

Most member of this large and beneficial family feed extensively upon aphids, scale insects or upon other small insect species, both adults and larvae being predacious. Some species fly to the higher levels of the local mountains where they spend the winter massed together in protected places.

- Hyperaspis lateralis Muls. Brigham and Snowville, August 1933 (Knowlton); Logan Canyon (Thatcher); Lucin, Wellsville, Sardine Canyon, Curlew, Promontory, Garland, Bovine and Trenton (Knowlton); Cache Junction (E. G. Titus). Also Stravell, Idaho, July 1929 (Knowlton).
H. bigeminata (Rand.). Keetley, August 16, 1935 (C.J. Sorenson).
H. significans Csy. Farmington, September 1934 (Knowlton-Smith).
H. gemma Csy. American Fork (Knowlton).
H. aterrina Csy. Grantsville, August 1929 (C.J. Sorenson).
H. taeniata Lec. Logan (R.E. Nye); Snowville, April 28, 1933 (Knowlton).
H. nevadica Csy. Logan, June (R.E. Nye); Snowville (Knowlton).
H. coloradana Csy. Farmington, September 4, 1934 (Knowlton-Smith); Bountiful; Kelton, August 15, 1933 (Knowlton).
H. fimbriolata Melsh. Green River (Knowlton).
H. cincta Lec. Kelton, August 15, 1933 (Knowlton).
H. inflexa Csy. Kelton 1934, and Moab (Knowlton).
H. postica Lec. Rosette, August 11, 1931 (Knowlton).
H. undulata (Say.). Hooper, July 1934 (Thomas); Thatcher (Knowlton).
H. tetraneura Csy. Logan, October 1, 1934 (R.C. Roskelley).
Brachyacantha bisubululata Fab. Ft. Duchesne, May 27, 1933 (F.K. Stoffers).
B. dentipes (Fab.). Cache Junction (H.R. Hagen); Manti, Vernal, and Timpie (Knowlton); Ft. Duchesne (Cutler); Trenton, on alfalfa (C.J. Sorenson); Logan Canyon (Harmston); Parley's Canyon (K.-M.J. Janes).
B. uteella Csy. Logan Canyon (Harmston); Cache Junction (Hagen). Also Rexburg, Idaho (Smith) and Lamoille Canyon, Nevada (H.B. Stafford).
Scymnus haemorrhus Lec. Ogden (Knowlton).
S. creperus Muls. Plain City, Provo, Spring Canyon and Snowville (Knowlton); Mill Creek (E.G. Titus).
S. uteanus Csy. Cedar Spring, Duchesne, Deseret, Maxwell, Uinta, Salt Lake City, Trenton, Spring Canyon, St. George, Cache Junction, Toquerville, Moab, Logan (Knowlton); Vernal (Knowlton-M.J. Janes).
S. weidti Csy. Smithfield Canyon, August 24, 1925 (Knowlton).
S. mormon Csy. Mandersfield, June 25, 1933 (Knowlton).
S. americanus Muls. La Verkin, 1933 (K.); Logan (Thatcher).
Psyllobora taedata Lec. Logan (J.A. Meacham); Logan Canyon (K.-Smith); Trout Creek, July (Stafford); Layton, Brigham (K.).
Ceratomegilla fuscilabris (Muls.). Grantsville, April 12, 1930 (K.).
C. vittigera Mann. Duchesne, Green River, Moab and Utahn, September 2-4, 1937 (K.-Harmston); Payson, Garfield, Smithfield (K.); Dragon, Boneta (Harmston); Ft. Duchesne (F.K. Stoffers).
Hippodamia 13-punctata (L.). Clinton, Farmington, American Fork, Elsinore, Logan,

Pleasant Grove, Spanish Fork, Ogden, Oren, Clinton, Hooper, Springville, Brigham, Vineyard, Salt Lake City, Roy, Lehi, Benjamin and Trenton (K.); American Fork (H.F.Thornley); Providence, (C.F.Smith). Feeds on the pea aphid and other plant lice.

- H. parenthesis Say. This species feeds commonly on aphids, but was less abundant in pea fields of Utah during the past three seasons than H. americana and H. convergens. Brigham, Riverdale, Wellsville (Knowlton); Coalville, Ft. Duchesne (C.J.Sorenson); Granite (M.W.Allen); Strawberry Valley (E.W.Anthon).
- H. apicalis Csy. Common in pea and alfalfa fields infested with the pea aphid, Macrosiphum pisi, during 1937 and 1938. Feeds upon aphids on range land. Feeding upon Macrosiphum coweni Hunt. at McIntyre, on sage brush, June 24, 1933 (K.); Castlegate, Coalville, Carrant Creek, Dry Lake, Fisher's Pass, Glendale, Kamas, La Sal, Manderfield, Marysvale, Monticello, Panquitch, Silver City, Skull Valley and Trout Creek (Knowlton).
- H. spuria Lec. August 4, 1933 (T.O.Thatcher).
- H. americana Cr. This species and H. convergens were the two most common ladybird beetles found in alfalfa and pea fields of northern Utah during April, May and early June of 1938 especially in Cache Valley. Next in abundance was Coccinella transversoguttatus. Adalia bipunctata was the most common species in Salt Lake County during May and was also very abundant in Utah County, being less abundant in Cache Valley. H. convergens became rather scarce during June and July and H. americana largely replaced it in the fields. The following species of ladybird beetles in the order of their abundance, also were taken while sweeping pea and alfalfa fields of the various Utah Counties in which studies were conducted during 1938: Hippodamia lecontei, Hippodamia 13-punctata, Ceratonagella vittigera, Coccinella 9-notata, Cycloneda munda, Hippodamia apicalis, H. parenthesis, Scymnus nebulosus, and Psyllobora 20-maculata. Hippodamia americana became the dominant species in alfalfa fields in Cache county during August.
- H. convergens Guer. This beneficial ladybird feeds extensively upon the pea aphid, orchard aphids, and various other plant lice in Utah. During the spring of 1938 approximately 10,000,000 specimens of this species, taken from hibernation in the mountains of California, were shipped to Utah for release in pea and alfalfa fields, to aid in the control of Macrosiphum pisi (Kalt). Most of the material was released in Cache, Weber, Morgan, and Utah Counties with some releases being made in nearby Idaho towns of Cache Valley. The beetles soon became widely scattered and it was impossible to determine the extent of their aid in pea aphid control. Adults of this species have been collected at various places throughout Utah including Bluff, Castlegate, Elsinore, Logan, Plain City, Promontory, Providence, Richfield, Santa Clara, St. George (Knowlton); Moab (W.W.Henderson); La Point and Salina (Sorenson). A third instar convergent ladybird beetle was placed in a two dram homeopathic vial with eight nymphal pea aphids. Within a few seconds the ladybird larva siezed a first instar aphid and entirely ingested it in less than thirty seconds. A third-instar aphid next was captured by the predator, which used its pro-legs to manipulate its prey. The body fluids of this aphid were consumed within forty seconds. The whole aphid body then was worked, head foremost, into mouth of the predator and was gradually taken into its body, except for one tibia and tarsus which were broken off. The predator continued to chew upon the protruding aphid legs until the portion disappeared into its mouth. Three minutes were required to consume this pea aphid nymph. Four aphids were captured and eaten by this ladybird larva in the total elapsed time of twenty minutes. On another occasion, an adult H. convergens was observed to be feeding upon a Cinara sp. aphid upon the tip growth of Austrain pine at Logan, September 29, 1937 (Knowlton). Several adult convergent ladybird beetles were observed to be feeding upon one-fourth to one-half grown larvae of the alfalfa weevil, in heavily infested alfalfa fields at Taylorsville, Murray, and Sandy during the spring of 1937 (Knowlton). Several hundred adults of this ladybird

species were collected in a light trap operated near Spanish Fork on July 22, 1936. This ladybird was studied particularly, during 1937, as a predator of the pea aphid in Utah, adults and larve feeding readily upon this aphid pest in the field and under laboratory conditions. On July 31, 1936, an adult convergent ladybird was observed under field conditions to be devouring a large brown aphid, Macrosiphum ambrosiae, at North Logan; the ladybird had already consumed most of the abdomen when it was first observed, and finished ingesting its prey within two and one half minutes (Knowlton).

- H. lecontei Muls. Analsa, Bear River City, Corinne, Fielding, Garland, Greenville, Kanesville, Lewiston, Park Valley, Midvale, Richmond, Riverside, Roy, Trenton (Knowlton) and Tremonton (C. J. Sorenson). Feeds on various species of aphids.
- H. uteana Csy. Feeding on Myzua persicae on beets at Collinston, July 1924 (K); Enoch (Sorenson); Cedar City, Collinston, Copperton, Logan, Promontory and St. George (Knowlton).
- H. 5-signata Kby. Bear River City, Beaver Dam, Blue Creek, Brigham, Garland, Logan, Richmond, Spring Canyon and Trenton (Knowlton). Providence (Janes, Hammond). An adult five spotted ladybird beetle, collected in a pea field at Brigham, and placed in a vial with pea aphids, was observed to spring upon a third instar pea aphid, which was grasped by the predator's pro- and meso-thoracic legs. Feeding first occurred at the base of the meso-thoracic coxae of the aphid. The pro-thoracic legs of the predator were used to manipulate the victim, while feeding occurred at several points. At the end of one minute of feeding, the body fluids of the victim had been consumed; the remainder of the aphid body was then discarded.
- Coccinella perplexa Muls. Logan Canyon, July 17, 1938 (D. E. Hardy).
- C. 9-notata Host. Blue Creek, Corinne, Jensen. Logan, Salt Lake, Snowell, Snowville, and Trenton (Knowlton); Stansbury Island (Pack-Hagan-Titus); Granite (Allen).
- C. degenes Csy. Wellsville, Park Valley, Smithfield, Lamo and Logan (Knowlton); Ft. Duchesne (L. Cutler); Keetley (Sorenson); St. George (H. J. Pack).
- C. transversoguttata Fald. Anderson, Blacksmith Fork Canyon, Blue Creek, Corinne, Elsinore, Fruitland, Grantsville, Hobbie Creek Canyon, Layton, Lehi, Logan, Lynndyl, Mapleton, Mendon, Providence, Provo, Roosevelt, Soldier Summit; Strawberry Valley, Timpie and Trenton (Knowlton); Ft. Duchesne (Sorenson-Stoffers); Trout Creek (Stafford); Park Valley (Roskelly); River Heights (Smith-Harnston). This species lives largely on aphids.
- C. transversoguttata var. 5-notata Fald. Ft. Duchesne (Stoffers); Logan (B. K. Whitaker); Providence (Janes); River Heights (K.-Smith); Thatcher (K.-Janes); La Point (Sorenson); Farmington (Gunnell); Monrow (E. G. Titus).
- C. transversoguttata californica Mann. Logan (M. J. Janes).
- C. monticola Muls. Fruitland (Knowlton).
- Cycloneda rubripennis (Csy). Blacksmith Fork Canyon (Smith); Logan Canyon and Providence, June, August 1933 (Knowlton).
- C. sanguinea L. Blacksmith Fork Canyon (Rowe-Smith); Stansbury Island (Pack-Hagan-Titus).
- C. polita Csy. Logan, Toquerville, Benjamin, Willow Creek, Providence (Knowlton), Blacksmith Fork Canyon (Thatcher); Trout Creek (Stafford).
- Olla abdominalis (Say). Grafton (Sorenson); Hurricane, Leeds, Santa Clara (K.).
- Adalia bipunctata L. This ladybird feeds on pea aphids as well as upon other plant lice. Clinton, Providence, Magna and Trenton (Knowlton); River Heights; Springville (K.-Smith); Park Valley (Roskelly); and Logan (Hammond, Linford).
- A. annectans Cr. Blue Creek and Logan Canyon (Knowlton).
- A. transversalis Csy. Providence, June 11, 1931 (D. M. Hammond).
- A. coloradensis Csy. Logan, May 14, 1931 (W. L. Thomas).
- A. frigida humeralis Say. Brigham (K.-Hardy); Blacksmith Fork Canyon (Smith); Logan (K.-Thatcher); Perry (K.-M. Janes).
- A. melanopleura Lec. Logan Canyon, Magna and Moroni (Knowlton).
- Cleis picta (Rand). Flag Peak (Thatcher); Indian Canyon, June 8, 1933 and Logan Canyon (Knowlton).
- C. minor Csy. Logan Canyon (J. A. Rowe); Logan (J. A. Meacham); Providence,

April 18, 1935 (C.F.Smith-W.L.Thomas).

Anetis ruthroni Lec. Logan Dry Canyon (Thatcher). Also Kinkioka National Forest, Idaho (Thatcher).

A. lecontei Csy. Brigham (Knowlton-M.F.Bowen); Providence (Knowlton); Logan Canyon (K.-Thatcher); Logan (Harnston).

Chilocorus bivulnerus Muls. Logan (Thatcher, Mouchaux-Nye); Logan Canyon (S.-K).

C. stigma Say. Providence, May 15, 1935 (Knowlton).

Exocnopus californicus Csy. Leads, July 10, 1934 (Knowlton-Smith); Current Creek, Fruitland and Willow Creek (Knowlton).

E. fasciatus Csy. Anderson's Junction, Logan and Tremonton (Knowlton); Brigham (M.F.Bowen); Peery (Knowlton-M.J.Janes).

E. marginipennis Lec. Logan Canyon, May-September (Thatcher).

E. aethiops Bland. Richfield, September 15, 1934 (Harnston).

E. mormonicus Csy. Richfield, August 7, 1904.

E. septentrionis Weise. Grouse Creek, August (K.-Janes); Moab (Knowlton).

E. parvicollis Csy. Juab, Strawberry Valley, and Logan Canyon (Knowlton); Kams and Woodland (Knowlton-Janes).

Epilachna corrupta Muls. The mexican bean beetle has injured bean foliage in several Utah areas during recent years. Recent beetle collections were made at Moab, Santa Clara, St. George (K.); Price and Wellington (K.-Harnston); Ft. Duchesne (F.K.Stoffers). This is the only pest species in this family occurring in Utah. Following the very light winter of 1937-1938, damage to beans in the Price-Wellington area during 1938 was the most extensive and severe yet experienced in Carbon County.

Family ALLECULIDAE

Hymenorus punctatissimus Lec. Damaging corn and fruit at St. George, July 28, 1933 (W.F.Smith), (Det. Dr. E.A.Chapin); Iosepa, July 11, 1933 (Knowlton).

Family TENEBRIONIDAE - Darkling Beetles

Triorophus ruficeps Lec. Santa Clara, April 26, 1935 (Knowlton).

Ecdytes rotundus Say. Delle, Skull Valley, August 1933 (Knowlton).

Cryptoglossa verrucosa Lec. Morrissey, June 25, 1933 (Knowlton).

Glyptasida crenicollis Csy. Ft. Duchesne, September 1932 (Knowlton).

Eleodes caudifera Lec. Kanab and Skull Valley, 1933 (Knowlton).

E. omissa Lec. Delle, June 3, 1932 and Willow Creek (Knowlton); St. George 1928 (Pack); Ft. Duchesne (Stoffers).

E. cordata Esch. Logan, April 15, 1931 (W.L.Thomas).

Embaphion contusum Lec. Snowville, April (Lowell Cutler).

Sphaeriontis muricata Lec. Clive, September 20, 1932 (Knowlton); Lynndyl (G.E.King) Willow Creek (Knowlton-Thomas).

Coniontis uteana Csy. Honeyville, April 17, 1933 (Knowlton).

Blapstinus rufipes Csy. Timpie and Snowville, March 1933 (Knowlton); St. George, 1928 (H.J.Pack).

B. substriatus Champ. Logan Canyon, March 1932 (Knowlton).

Bolitotherus cornutus Panz. Ephraim, Roosevelt, 1934 (Harnston).

Platydemus oregonensis Lec. Card Canyon of Logan Canyon, August 15, 1937, on alpine fir (W.P.Nye).

Tribolium madens Charp. Infesting wheat at Newton during October, present in damaging abundance (Knowlton).

T. confusum Dural. A common pest of stored grain products in Utah.

Hypophloeus substriatus Lec. On Pinus contorta, Logan Canyon, October 21, 1934 (Thatcher).

Tenebrio molitor L. Logan, July 20, 1924 (Knowlton).

Helops aereus Germ. Snowville, April 21, 1933 (Cutler).

Bius estriatus Lec. Card Canyon of Logan Canyon, alpine fir, August 15, 1937 (W.P.Nye).

Family MELASIDAE

Anelastes druryi Kby. Trout Creek, July 1933 (H. B. Stafford).

Family MELANDRYIDAE

Serropalpus parbatus (Schall.). Logan Canyon, July 24, 1938 and Smithfield Canyon, July 18, 1938 (W. P. Nye).

Family PTINIDAE - Spider Beetles

Ptinus fur L. River Heights, April 19, 1931 (Thatcher).

Family ANOBIIDAE - Drug Store Beetles

Hadrobregmus gibbicollis (Lec.). Logan Canyon, August 1936 (W. P. Nye).
Trypophytus punctatus Lec. Logan, August 30, 1938 (Knowlton-Hardy).

Family BOSTRICHIDAE - Branch and Twig Borers

Amphicerus cornutus (Pallas). St. George, July 9, 1934 (K.-Smith).
A. hamatus (Fab.). Logan Canyon, November 1936 (Harmston).
Stephanopachys substriatus (Pack.). Kanab, July 9, 1932 (Knowlton),
S. pacificus Csy. In Douglas fir, Blacksmith Fork Canyon, August 22, 1937 (W. P. Nye).

Family SCARABAEIDAE - June Beetles and White Grubs

Several species are serious pest, difficult to control,
Canthon probus (Germ.). Currant Creek, June 11, 1933 (Knowlton); Logan (Green).
C. simplex Lec. Escalante, May 1938 (K.-Harmston); Logan Dry Canyon (K.-R. E. Nye); Morgan (Knowlton-Harmston); Fruitland, Kanab (Harmston).
C. pilularius (L.). Whiterocks, July 1935 (Harmston).
Onthophagus lecontei Harold. Mt. Emmons, July 1935 (Harmston).
O. californicus Horn. Timpie, April (Z.); Monticello, July (Harmston).
Aphodius denticulatus Hald. Jensen, June 11, 1935 (Knowlton).
A. fimetarius (L.). Logan, October and Park Valley, May (Knowlton).
A. anthracinus Lec. Logan Canyon, July 1937 (K.-Harmston).
A. granarius (L.). Jordan Narrows, June 8, 1936 (R. C. Roskelly).
A. consociatus Horn. Strawberry, June 1934 (E. W. Anthon).
A. rubidus Lec. Farmington, May 24, 1933 (Knowlton).
A. distinctus (Mull.). Cache Junction, April 27, 1935 (Knowlton); Logan, March 26, 1933 (T. O. Thatcher).
Odontaeus ovesus Lec. Vernal, August 15, 1935 (F. C. Harmston); Providence, August 5, 1934 (C. F. Smith).
Glaresis phoenicus Fall. Logan and Kaysville, June (Knowlton).
Trox lecontei Harold. Fruitland, May 1933 (Knowlton).
T. suberosus Fab. Oak Creek Canyon, August 1937 (Jeppson).
T. sonorae Lec. Currant Creek, Farmington, Hooper, Lehi, Logan, Orem, Pleasant Grove, Spanish Fork, Springville (Knowlton); Oak Creek Canyon (L. Jeppson); Logan (Knowlton-Hardy).
Licimantke canina (Horn). Altonah, July 15, 1938 and Indian Creek, June 25, 1938 (Knowlton-F. C. Harmston).

- Diplotaxis brevicollis Lec. American Fork, July; Logan, March; and Oak Creek Canyon, July 8, 1936 (Knowlton).
- D. subangulata Lec. American Fork, July; Granite and Spanish Fork, June 1936 (Knowlton); Trout Creek, April 1935 (H. B. Stafford).
- Phyllophaga anxia Lec. Adults collected at American Fork, August 27, 1936 (K.); Ephraim, October 9, 1936 (K.-C. J. Sorenson); Paradise (O. Lee); Provo May 10-16, 1936 (K.); Logan, May 17, 1937 (K.-Harmston); Logan Canyon, May 25, 1935 (K.-Thatcher); Salt Lake City, May 11, 1936 (K.); Spanish Fork, August 20, 1936 (K.); Tooele, June 8, 1934 (K.). The white grubs of Phyllophaga sp. damaged potatoes severely in many fields near Panguitch during recent years, and sugar beets at Woodside during 1938.^{2/}
- Polysphylus auratus Csy. Farmington, Hooper and Syracuse during July 1936 (Knowlton); Spanish Fork, June 1936 (Knowlton).
- P. decemlineata (Say). Collected during June and July, 1936, at Farmington, Hooper, Logan, Orem, Pleasant Grove, and Spanish Fork (Knowlton), the adults frequently being taken in trap lights at several of these localities; Oak Creek Canyon (Jeppson); American Fork (Thornley); Farmington (F. H. Gunnell); and one collection at Spanish Fork, July 1, 1936 (Knowlton).
- P. castanea Csy. Logan, July 21, 1923 (Knowlton).
- Dichelonyx maymona Fall. Logan and Logan Canyon, June 9, 1935 (R. E. Nye); Kyune (Knowlton); Whiterocks and Roosevelt, July 1935 (Harmston).
- D. truncata Lec. McIntyre, June 24, 1933 (Knowlton); Mt. Carmel and Zion National Park, June 18, 1935 (Knowlton).
- Macroductylus subspinosus (Fab.). Logan Canyon, August 3, 1936 and Neola, September 7, 1935 (F. C. Harmston).
- Cotalpa flavida Horn. Huntsville, May 24, 1938 and Indian Creek, July (K.-Harmston); St. George, April 25, 1935 (K.-Smith).
- Spilosota pallidissima Csy. Collected June-July, at American Fork, Clinton, Hooper, Kaneshville, Layton, Pleasant Grove, Spanish Fork and Syracuse, often in trap lights (Knowlton); Oak Creek Canyon, July 21, 1936 (L. Jeppson); Wellington, May 6, 1934, and Roosevelt, September 19, 1936 (F. C. Harmston); Delta (K.-Stains); Tooele (K.-Hansen).
- Ochrosida reflexa Csy. Common at light traps during July, with fewer taken during June and August of 1936 at Clinton, Farmington, Hooper, Logan, Orem and Spanish Fork (Knowlton); St. George, July 10, 1934 (Knowlton-Smith); Oak Creek Canyon, July 21, 1936 (Lee Jeppson).
- Liasyrus gibbosus (DeG.). The carrot beetle was common at light traps during June to August of 1936 at Clinton, Farmington, Hooper, Kaysville, Orem, Spanish Fork and Syracuse (Knowlton); Cedar City, June 3, 1938 (K.-L. L. Sargent); Delta, May 16, 1938 (L. L. Hansen); Oak Creek Canyon, August 14, 1937 (L. Jeppson); Santa Clara and St. George, April 25, 1935 (Knowlton-C. F. Smith). The white grubs of this species are general feeders attacking various plants including the roots of wheat, oats, barley and various wild grasses. The adults feed below as well as above ground, attacking sugar-beets, celery, parsnip, carrots, corn, potatoes, and dahlias.
- Euphoria inda (L.). The bumble flower beetle feeds on the ears of corn, peaches, apples, grapes and other fruits. Adult beetles were collected at Brigham, Santaquin, and Logan during April, at Flux in May, Brigham in July and at

^{2/} Some of the Phyllophaga material was determined by P. Luginbill and A. A. Granovsky.

- Dolomite in August (Knowlton); Boneta, September 14, 1935 (Harmston); Richmond (Hardy-Stains).
- E. sepulchralis (Fab.). Ouray, July 16, 1935, Logan and Roosevelt, September 17, 1936 (F.C.Harmston).
- E. rufobrunnea Csy. Logan, May (Whitaker); September (Thatcher).
- Cremastocheilus knochi Lec. Logan, July 31, 1935 and Mapleton, May 23, 1935 (Knowlton); LaPoint, June; Mt. Pleasant and Roosevelt, September, 1936 (Harmston).
- C. pugetanus Csy. Bothwell, May 15, 1931 (Knowlton).
- Trichiotinus assumilis (Kby.). Bennett, September 15, 1935, Whiterocks and Roosevelt, July 11, 1935 (Harmston); Logan, June 28, 1936 (R.E.Nye).
- Paracotalpa granicollis Hald. Cedar Valley, Dolomite, Ophir, Tirpie and Vernon, May 1936 (Knowlton); Promontory, April 2, 1935 (K.-Smith); Moab, April 12, 1938 (Knowlton-Harmston).

Family CHRYSOMELIDAE -- Leaf Beetles

- Donacia magnifica Lec. Uintah Canyon, August 6, 1935 (Harmston).
- D. subtilis Kunze. Macser, August 10, 1935 (Harmston).
- Crioceris asparagi (L.). The asparagus beetle damaged asparagus in one field at Sunset during 1937, and was injurious in several of the asparagus growing areas of south Weber and northern Davis Counties during 1937 and 1938.
- Orsodacne atra (Ahr.). Logan, August 3, 1933 (Thatcher).
- Lema trilineata trivittata Say. Lewiston; Sandy.
- L. nigrovittata Aust. May to July at Farmington (M. J. Jones; Hooper (Knowlton); Logan (Thatcher-Stoffers); Salt Lake City, Santaquin and Toquerville. (Knowlton); St. George, June 19, 1929 (H.J.Pack).
- Coscinoptera dominicana Fab. Logan.
- C. vittigera Lec. Ft. Duchesno, July 20, 1932 (L.Cutler).
- Saxinis saucia Lec. The red-shouldered leaf beetle, Logan, July 5, 1931 (W.L. Thomas).
- Sometimes attacks buds of leaves of nursery stock, prunes, apricot and almonds.
- Chlamys monnolia Lec. Ft. Duchesno, June 13, 1932 (Stoffers).
- Exema conspersa (Mann.). Harum Canyon on Artemisia, August 18, 1925 (Knowlton).
- Pachybrochys analis Lec. Kanab, June 26, 1933 (Knowlton).
- P. abdominalis (Say). Moroni, June 28, 1933 (Knowlton).
- P. bivittatus (Say). Feeds on willow in Utah.
- P. melanostictus Suff. Feeds on willow leaves.
- P. vau Fall. Stansbury Island, May 31, 1933 (Knowlton-Anthon).
- Cryptocephalus sanguinicollis Suff. Trout Creek, May 1934 (Smith).
- C. confluens Say. Mt. Carmel, June 25, 1933 (Knowlton).
- C. quadrimaculatus Say. Riverdale, Idaho, May 1934 (Smith).
- C. deflectus Lec. (?). Logan, June 17, 1931 (W.L.Thomas).
- Glyptoscotis alternata Cr. Northern Utah.
- G. squamulata Cr. Littlefield, Arizona, April 25, 1935 (Knowlton).
- Chrysocnus cobaltinus Lec. The blue willow beetle is common in Utah. Ogden, Lehi, Salt Lake City, Payson (Knowlton).
- Leptinotarsa decemlineata (Say). The Colorado potato beetle occasionally damages potatoes in the small infested area from North Ogden and Marriott in Weber County to Sunset and Clinton in Davis County. This species does not occur over Utah at this time, and efforts to keep it thoroughly controlled have been rather successful in preventing spread.
- Zygogramma exclamationis (Fab.). Blacksmith Fork Canyon, August 18, 1925 (Knowlton).

Z. conjuncta Rog. St. George, Mills, Jensen, Kelton, Ft. Duchesne and Promontory (Knowlton).

Calligrapha sismoidea Lec. Logan, November 1930 (Thomas).

Linea scripta (Fab.). The cottonwood leaf beetle occasionally is found feeding upon the leaves of poplar or willow. The larvae severely skeletonize the leaves. Bountiful, June 1929 and Watson, July 30, 1937 (H. J. Pack).

Trirhabda nitidicollis Lec. Randlett, July 14, 1927 (Knowlton).

T. lewisi Cr. Clear Creek, July 1, 1926 (Knowlton).

Gal. rucella notatata (Fab.). Manti, July 26, 1927 (Knowlton).

G. xanthomelaena (Schrank). The elm leaf beetle was found damaging the foliage of a number of young and older elm trees at Smithfield. By the end of the season, sixteen trees were found to be injured on one block south of town, the older trees being much more severely damaged than young trees which had been dusted with calcium arsenate.

Monoxia crosa Lec. Granger, July 2, 1930 (Knowlton).

M. debilis Lec. Snowville, on mustard, July 15, 1930 (K.).

Diabrotica duodecimpunctata (Fab.). The twelve-spotted cucumber beetle was taken at St. George, June 26, 1933 (Knowlton). The larvae feed upon the roots of grasses, corn, oats, wheat, rye and weeds. The adults feed upon cucumbers, melons, squash, gourds, and sometimes upon fruit trees.

D. duodecimpunctata tenella Lec. This variety of the twelve spotted cucumber beetle is abundant in southern Utah, often coming to lights in large numbers in the evening. Collected in numerous southern towns including LaVerkin 1933, Santa Clara and Washington during June 1935 (Knowlton); Toquerville, July 8, 1932 (K.-Jones); St. George, July 1934 (K.-Smith).

Scelolyperus longulus (Lec.). Bountiful, June 10, 1929 (Pack).

Disoncha pennsylvanica (Ill.). Logan.

D. univittata (Say). Joseph, September 25, 1929 (Knowlton).

D. latifrons Schf. Snowville, April 17, 1931 (Knowlton).

D. pluriligata Lec. Orderville, June 27, 1933 (Knowlton).

D. triangularis (Say). Trout Creek, May 8, 1934 (C. F. Smith).

Haltica birmaninata Say. Logan, April 27, 1929 (Knowlton).

Epitrix subcrinita Lec. The western potato flea beetle is shining bronze, often damages potato and tomato foliage by producing great numbers of "shot" holes. Related solanaceous plants also are fed upon. College Ward, Cache Junction, Lewiston, Roy, Salt Lake City and Santaquin (Knowlton); Providence (C. F. Smith).

E. parvula (Fab.). The tobacco flea beetle attacks potato, tomato, eggplant and squash in Utah. Farmington, June 13, 1935, Granger and Taylor, July 16, 1935 (Knowlton).

Chalcoides fulvicornis nana Say. Ogden, June 1927 (Knowlton).

Chaetocnema subviridis Lec. Fairview, Gunnison, June (Knowlton).

C. denticulata (Ill.). The toothed flea beetle feeds on beets, corn and grasses.

C. confinis Cr. On sugar-beets, Cache Junction, August 1937 (K.).

Systema taeniata (Say.). The banded flea beetle is a common pest of sugar-beets and gardens throughout Utah, also feeding on table beets, egg-plant, lettuce, melons, corn, peas, parsnips, radish, tomato, strawberry and turnip. Large numbers were feeding on peanut foliage at Castleton, June 1930 (Knowlton).

Psylliodes punctulata Melsh. The hop flea beetle is frequently a pest of beets in sugar beet growing areas of Utah. It also feeds on several wild mustards, such as Chairinia repanda, Sophia, Noria altissima, on Russian thistle, and upon cabbage, cucumber, radish, potato, tomato, rhubarb, turnip, water melon and water cress.

Chelymormna cassidea (Fab.). The Argus tortoise beetle feeds upon morning glory, corn, cabbage, cauliflower and raspberry. Logan, August (Thatcher); Hyrum, August (Harmston); Jordan Narrows (Roskelley); Provo, July 20, 1925 (C.J. Sorenson).

Jonthonota novemmaculata (Mann.). Logan, February (Thatcher).

Chirida guttata (Oliv.). Logan, July 2, 1930 (J.H. Linford).

C. guttata lucidula (Boh.). Logan, July 1931 (Linford).

Family LUCANIDAE

Platycerus depressus marginalis Csy. Logan, July 1, 1927 (Knowlton).

Pseudolucanus mazana Lec. American Fork, Spanish Fork and Springville, June-July 1937 (Knowlton).

Family MYLABRIDAE - Pea and Bean Weevils

Mylabris pisorum (L.). The pea weevil occasionally is encountered in fields in Utah, and has been found infesting garden pea seed saved for planting in several instances. During 1938 the adult beetle was collected from Brigham, Butlerville, Eden, Granite, Honeyville, Holladay, Liberty, Murray, Nibley, Providence, Sandy, Salt Lake and Union; it is usually present in very small numbers.

M. obtectus (Say). The bean weevil occasionally destroys beans in storage in various parts of Utah.

M. prosopis L. St. George, April 26, 1935 (Knowlton-Smith). Also Tokio, Nevada, April 27, 1935 (Knowlton).

Family PLATYSTOMIDAE

Eurymycter fasciatus (Oliv.). Santa Clara, April 22, 1934 (Knowlton).

Family CURCULIONIDAE - Weevils, Snout Beetles

Deporaus glastinus Lec. Granite, June 18, 1936 (M.W. Allen); Willow Creek, June 17, 1933 (Knowlton-W.L. Thomas).

Rhynchites bicolor wickhami Oкл. The rose snout beetle is a pest of cultivated and wild roses, the adults drilling small round holes into the buds, resulting in unsightly flowers. Holes are also made in the ovary for egg laying, the larvae feeding in the seed pods. The flowers of raspberry and blackberry sometimes are injured also. Adults were collected on rose at Castlegate, Chester, Ft. Duchesne, Ralapp and Moroni during June 1933 (Knowlton); Whiterocks, June 25, 1930 (C.J. Sorenson).

Apion occidentali Fall. La Point, September 25, 1929 (Sorenson); Ogden, June (D.E. Hardy); Thompson (Knowlton-Harmston).

A. hesperum Fall. Kaneshville, Ogden, June 1937 (D.E. Hardy).

A. sordidum Sm. Occurs on Artemisia in Utah.

A. porosicollis Gemm. Present in Utah.

A. cavifrons Lec. Logan Canyon, April 29, 1934 (Thatcher).

A. nasutum Fall. Green Canyon, September 19, 1937 (Knowlton); San Rafael Swell, September 12, 1937 (W.P. Nye).

Cimbochera pauper Horn. Utah. Also Cody, Wyoming, 1935 (Thomas).

Dystobus tanneri Van D. Logan Canyon, June 9, 1933 (Knowlton).

Panscopus peculiaris (Horn). Ruby Mountains, Nevada (Stafford).

Pandeleiteius submetallicus Schffr. Logan Canyon, July 10, 1938 (W.P. Nye); Jericho, July 24, 1933 (Knowlton).

Brachyrhinus sulcatus Fab. Only one collection of the black vine weevil was made in Utah, this being at Logan, July 2, 1935 (M.W. Allen-C.F. Smith). It is

likely that this will eventually become a more serious pest of strawberry, blackberry, raspberry and other plant roots in Utah.

- B. ovatus (L.). The strawberry root weevil is the most serious pest of cultivated strawberry roots, occurring throughout northern Utah; this has also been found to attack wild strawberry plants in Logan Canyon, 1934-1935 (T.O. Thatcher-W.P. Nye). Raspberry roots were seriously attacked and one-third of an acre of the plants were largely devitalized and many plants killed, in one heavily infested raspberry patch examined at Vineyard, July 11, 1936 (Knowlton-Smith).
- B. rugosostriatus Goeze. The rough strawberry weevil frequently is a pest, destroying strawberry patches in Utah, sometimes being more important than the strawberry weevil. Often these two species are found together, killing out patches of two and three year old strawberry beds.
- Cercoperus artemisiae Pierce. The Artemisia weevil is common in Utah on sage, and reportedly attacks buds and foliage of fruit in parts of the West. Curlew and Showell, March 15, 1934 (W.L. Thomas); Locomotive Springs (Thatcher); Promontory, May 24, 1934 (Knowlton-Thomas).
- Tricolepis inornata Horn. The small gray leaf weevil attacks oak and certain fruit trees. Brigham, Kyune, Providence, and Soldier Creek (Knowlton); Trout Creek, April 1934 (J.A. Rowe); Logan and Providence Canyon (Thatcher); Strawberry Valley (Anthon).
- Sitona hispidulus (Fab.). The clover root curculio is generally distributed in Utah, sometimes causing injury to alfalfa and clover. Recently collected at Hooper, Hyrum, Logan, Millville, Plain City, Snowville, Trenton and Wellsville (Knowlton). This species has been taken on sugar-beets on numerous occasions in Utah.
- Hypera punctata (Fab.). The clover leaf weevil is generally distributed and sometimes a pest of alfalfa and clover in various Utah localities.
- Phytonotus posticus (Gyll.). The alfalfa weevil is a common pest of alfalfa throughout Utah. Larvae were at times observed to be attacked by Nabis forus, N. alternatus and Hippodamia convergens in Salt Lake and Utah counties during recent seasons.
- Lepyryus geninatus Say. Logan, June 1, 1931 (Thomas).
- L. pinguis Csy. Logan Canyon, June 20, 1934 (Thatcher).
- Phyllotrox nubifer Lec. Logan Canyon, July 11, 1937 (Knowlton-W.P. Nye).
- Notaris puncticollis (Lec.). Hooper, July 9, 1937 (D.E. Hardy); Spanish Fork, May 13, 1936 (Knowlton).
- Desmoris constricta (Say). Ft. Duchesne, Moab, Roosevelt and Vernal (Knowlton-Harnston); Logan (Titus); Price (Knowlton).
- D. fulvus (Lec.). Granite, August 25, 1935 (Allen); Lewiston, 1925 (Knowlton); Roosevelt and Thompson (Knowlton-Harnston).
- Smicronyx vestitus Lec. Richfield, June 27, 1927; Lewiston, August; and Corinne, September 9, 1925 (Knowlton).
- S. commixtus Diez. May to August, Bear River City, Garland, Hooper, Lewiston, Moroni, Nebo and Price (Knowlton); Monroe, Elsinore (E.G. Titus); Plain City (Knowlton-H.J. Janes).
- Promecotarsus desus Csy. Promontory, August 4, 1933 (Knowlton).
- Endolus limatulus (Gyll.). Moab, July 30, 1935 (Knowlton).
- Onychylis nigrirostris (Boh.). Kaneshville, June 16, 1937 (Hardy); Manti, June 19, 1935 (C.J. Sorenson).
- Lixellus filiformis Lec. Kaneshville, June 16, 1937 (Knowlton).
- Proctorus armatus Lec. Logan Canyon, May 1937 (Knowlton).
- Tychieus lineellus Lec. Eden, July and Salt Lake City (Knowlton); Leeds, on Lupinus, April 25, 1935 (Knowlton-Smith).
- Otidoccephalus vittatus Horn. Promontory and Willard (Knowlton-Smith).
- O. nivosus Csy. Utah (Knowlton).
- Magdalis subtinata Lec. Cody, Wyoming, July 26, 1935 (W.L. Thomas).

- Curculio uniformis (Lec.). Butlerville, August 1935 and Granite, July 1936 (Allen); Oak Creek Canyon, August 1937 (L. Jeppson).
- C. strictus (Csy.). Butlerville and Granite (Allen); Logan (Harmston).
- Anthonomus haematopus Boh. Logan Canyon, June (Thatcher).
- A. squamosus Lec. Cisco, June 19, 1933 (Knowlton), Ft. Duchesne (K.-Stoffers); Wellsville and Monticello, August 1936 (Knowlton).
- A. schaefferiae Fall. Copperton, July 3, 1929 (Knowlton).
- A. heterogeneous Dietz. On strawberry, Riverheights, August 2, 1934 (C.F. Smith).
- Orechesus ephippiatus (Say). Plain City, July 27, 1936 (Knowlton); West Weber, September 30, 1936 (Knowlton-Allen).
- Dinocleus interruptus Csy. Ft. Duchesne, June 1932 (Stoffers).
- Cleonus pulverus (Lec.). Zion National Park, 1926 (Knowlton).
- C. canescens Lec. Sometimes attacks young fruit tree buds.
- C. lobiferinus Csy. On Cheirinia repanda, Timpie, May 14, 1931 (Knowlton).
- C. modestus (Mann.). Moab (Knowlton); Bluff (Stafford).
- Lexus asper Lec. Santa Clara, April 26, 1935 (Knowlton).
- L. concavus Say. Cornish, June 21, 1935 (J.A. Rowe).
- L. semivittatus Csy. Logan, June 4, 1935 (R.E. Nye).
- L. fimbriolatus Boh. On sunflower, Logan, August 14, 1932 (Knowlton).
- L. terminalis Lec. Sardine Canyon, August 8, 1937 (Knowlton-Harmston).
- Baris interstitialis (Say). Logandale, Nevada, April 1935 (Knowlton).
- Trichobaris mucorea Lec. Littlefield, Arizona, April 1935 (Knowlton).
- T. compacta Csy. Pintura, Santa Clara and Toquerville, June 26, 1933 (Knowlton); St. George, September 1928 (H.J. Pack). Also Littlefield, Arizona, April 25, 1935 (Knowlton).
- Cylindrocipitarius adpersus (Lec.). The sunflower snout beetle larvae work in wild and cultivated sunflower stalks. Farmington and Hooper, June 1937 (Hardy); Nephi, July 1927 (Knowlton).
- Cossomus americanus Buch. Battle Creek, Idaho, 1935 (Knowlton).
- Rhodoabaenus tredecimpunctatus (Ill.). Bear River City, September 7, 1933 (K.-Janes); Logan (Thatcher); Nephi (Knowlton); Smithfield.
- Sphenophorus norman Chitt. Logan (K.); Salt Lake (Stafford).
- S. ulkei Horn. Austin, Elsinore, Logan and Thistle (Knowlton), in June; Springville, August 19, 1933 (E.W. Anthon).
- S. ochreus Lec. Bountiful (Stafford); Jordan Narrows (Roskelley).
- S. pertinax (Cliv.). Logan (Whitaker); Salt Lake (Stafford).
- S. costipennis Horn. Greendale, August 1937 (Knowlton-Harmston).
- S. gentilis Lec. Farmington, June 19, 1937 (D.E. Hardy).
- Calendra granaria (L.). The granary weevil occasionally damages stored wheat in Utah. Delta and Huntsville (Knowlton).
- C. oryza (L.). The rice weevil sometimes damages wheat in storage.
- Anacentrinus nastutus Lec. Farmington, June 1937 (Hardy); Jordan Narrows (Roskelley); Wellsville (Harmston); Logan (Knowlton).

BUPRESTIDAE, CERAMBYCIDAE AND SCOLYTIDAE

G. F. Knowlton and Wm. P. Nye 3/

Family BUPRESTIDAE - Flat-Headed Borers

- Acmaeodera sparsa Horn. Farmington, September 4, 1934 (K.-Smith).
- A. labyrinthica Fall. Trout Creek, May 6, 1934 (Eldon Gardner).
- A. connexa Lec. Trout Creek, May 6, 1934 (J.A. Rowe).
- A. variegata Lec. Blacksmith Fork Canyon, June 20, 1937 (K.-Smith); Granite, May 22, 1936 (Smith); Hobbie Creek, June 24, 1936 (Knowlton); Leeton, September 1936 (Harmston); Logan Canyon, July 7, 1935 (W.P. Nye).

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- A. vandykei Fall. Blacksmith Fork Canyon, June 20, 1937 (K.-Smith); Granite, May 2, 1936 (K.); Logan Canyon, June 30, 1935 (W.P.Nye-R.E.Nye); Oak Creek Canyon, July 2, 1936 (L.Jeppson).
- Hippomelas oblitterata (Lec.). St. George (R.A.Morris, Jr.).
- Chalcophora angulicollis (Lec.). Taken from dead Pseudotsuga mucronata at Logan, July 13, 1933 (B.G. Whitaker).
- Dicerca tenebrosa (Kby.). Logan Canyon, May 1936 (C.J.Davis); Smithfield Canyon, July 1937 (Davis); damaging peach trees at Tooele, September 1938 (Hansen).
- D. prolongata Lec. Found damaging Populus spp. at Logan, May 25, 1936 (Davis); Logan Canyon, May-July 1936 (W.P.Nye); Peterson, June 1937 (Davis); Trout Creek, May 7, 1935 (Smith).
- Buprestis aurulenta L. Logan, September 1932 (Whitaker); Salt Lake City, September 1936 (Harnston); Whiterocks Canyon, July 4, 1934 (Harnston).
- B. maculativentris var. drummondi Say. Beaver Creek, Logan Canyon, August (Davis).
- B. maculativentris var. rusticorum Kby. Found on Pseudotsuga taxifolia at Logan Canyon, August 8, 1937 (W.P.Nye).
- B. mittalli var. alternans (Lec.). Found on Pinus contorta at Beaver Creek, Logan Canyon, August 22, 1937 (Davis); Farm Creek, Uintah County, September 19, 1936 (Harnston). Also Beaver Creek of Logan Canyon, Idaho, July 28, 1937 (W.P.Nye).
- B. confluenta Say. Logan Canyon, June 13, 1937 (W.P.Nye); Uinta Canyon, April 19, 1936 (Harnston).
- B. fasciata var. langi (Mann.). Brigham, July 29, 1937 (K.); Granite, June (M.W.Allen); La Point, September (Harnston); Logan, July-August (K.-W.P.Nye); Logan Canyon, July (W.P.Nye). Also Fish Haven, Idaho, July 25, 1937 (K.).
- Melanophila gentilis Lec. Farm Creek, Uintah County, September (Harnston).
- M. californica Van Dyke. Logan Canyon, May 15, 1934 (Thatcher).
- M. fulvoguttata var. drummondi (Kby.). Logan Canyon, June 15, 1935 (K.-Thatcher, Harnston-Smith); Beaver Creek of Logan Canyon, August 22, 1937 (Davis).
- M. acuminata (DeG.). Provo, June 23, 1936 (K.-Allen); Roosevelt, July (Harnston). Also Ashton, Idaho, July-September 1933 (R.J.Costley); Idaho Falls, Idaho, July 1932 (C.J.Sorenson) and Gardiner, Montana, July 1936 (Knowlton).
- Anthaxia viridifrons Gory. Logan Canyon, June 30, 1935 (W.P.Nye).
- A. sublaevis Van D. Logan Canyon, July 23, 1938 (W.P.Nye).
- A. aeneogaster Cast. Found in Douglas fir and alpine fir at Blacksmith Fork Canyon, June 20, 1937 (K.-Harnston); Logan Canyon, June 1936 (R.E.Nye); Logan Canyon, April 8, 1936 (W.P.Nye). Also Eldredge, Montana, July 1936 and Victor, Idaho, July 1936 (Knowlton).
- A. deleta Lec. Logan Canyon, June 1, 1936 (W.P.Nye).
- Chrysobothris ignicollis Horn. Trout Creek, May 6, 1934 (Eldon Gardner).
- C. breviloba Fall. Beaver Creek, Logan Canyon, August 22, 1937 (Davis).
- C. femorata (Cliv.). Logan, June 24, 1935 (Smith-Gunnell); Smithfield Canyon, June 11, 1926 (Knowlton); Trenton, June 26, 1935 (Smith-Rowe).
- Agrilus walsinghami Cr. American Fork; Berton, August 6, 1930 (K.); Cedar Valley, August 25, 1932 (Janes); Grantsville, July 1933 (Thomas); Little Cottonwood Canyon, August 1935 (K.-Smith); Timpie, July 1930 (Janes).
- A. anxius Gory. Logan Canyon, June 27, 1937 (W.P.Nye) and July 1937 (K.-Nye).
- A. politus (Say). Circleville, June 19, 1935 (Sorenson); Blacksmith Fork Canyon and Brigham Canyon, June 1937 (K.-Harnston); Granite, June 1936 (K.-Allen); Farmington, June (Hardy); Ft. Duchesne, June 1937 (K.-Harnston); Lindon, July 16, 1937 (K.); Logan Canyon, March and June (W.P.Nye); Roosevelt, July 1935 (Harnston). Also Ucon, Idaho, July 14, 1936 (Knowlton).
- A. felix Horn. Ogden, June 17, 1937 (D.E.Hardy).
- Brachys aerosus Melsh. Logan Canyon, May 17, 1934 (C.F.Smith).
- Taphrocerus gracilis (Say). Salina, July 22, 1937 (Knowlton-Dorst).

Family CERAMBYCIDAE - Longhorn Beetles

- Ergates spiculatus var. neomexicanus Csy. Dry Gulch, Duchesne County, September 5, 1935 (Harmston); Also Alpine, Arizona, July 2, 1936 (C.V. Anderson).
- Prionus spaldingi Csy. Bluebell, September 1935 (Harmston); Ft. Duchesne, August 1932 (L. Cutler); Granite, August 5, 1935 (Allen); Green Canyon, September 20, 1935 (W.P.Nye); Hayden, July 1935 (Harmston); Hooper, July 1936 (K.); Logan Canyon, June 1937 (W.P.Nye); Neola, September 1935 (Harmston); Orem, August 1936 (K.); Spanish Fork, June and July (Knowlton).
- P. integer Lec. Bennett and Boneta, September 1935 (Harmston).
- P. marginatus Say, Logan, July 21, 1937 (Knowlton-W.P.Nye).
- Tragosoma depsarium var. harrei Lec. Logan, July 1936 (K.); Tridell (Harmston).
- Spondylis upiformis Mann. Bluebell, September 19, 1935 (Harmston); Hooper, June 1937 (K.); Logan Canyon, July 1937 (K.). Also Gray, Idaho, July 4, 1937 (R.E.Nye).
- Aseman atrum Esch. Bluebell, September 19, 1935 (Harmston); Curay, July 16, 1935 (Harmston). Also Ashton, Idaho, August (R.J. Costeley).
- Criocephalus productus Lec. Leeton, Sept. 1935 (Harmston); Logan, August (W.P.Nye).
- Haplidus testaceus Lec. Uinta Canyon, August 6, 1935 (Harmston).
- Methia mormona Linell. American Fork, August 4, 1936 (K.); Granite, August 1935 (Smith-Anthon); Farmington, July (K.); Logan, July, (K.-Dorst); August (W.P.Nye); Logan Canyon, June 13, 1937 (Nye); Spanish Fork, July 1936 (K.).
- Aneflomorpha parowana Csy. Farmington, July 8, 1936 (F.H. Gunnell).
- A. gilama Csy. Granite, July 15, 1936 (Allen); Logan, August 9, 1936 (Harmston); Oak Creek Canyon, July 21, 1936 (L. Jeppson).
- Brothylus castaneus Casey. Farmington, June 12, 1935 (Anthon).
- B. gemmulatus Lec. Oak Creek Canyon, July 4, 1937 (Jeppson).
- Rhagium lineatum Cliv. Damaging Pinus contorta and Douglas fir at Beaver Creek, Logan Canyon, August 22, 1937 (Davis); Cache National Forest, June 1932 (Van Buren); Logan Canyon, April 1937 (W.P.Nye); Neola, July 1935 (Harmston).
- Stenocorus vestitus Hald. Blacksmith Fork Canyon, June 9, 1935 (Smith-Rowe); Logan Canyon, June 9, 1935 (R.E.Nye).
- S. vestitus var. ater Leng. Logan Canyon, June 9, 1935 (W.P.Nye).
- S. morio Casey. Ogden Canyon, June 25, 1937 (Hardy).
- S. uteanus Csy. Farmington, June 1935 (Anthon); Logan Canyon, July 1909 (E.P. Hoff); Logan and Logan Canyon June 1935 (W.P.Nye).
- Pachyta liturata Kirby. Beaver Creek, Logan Canyon, August 1937 (Davis).
- Leptacmaeops cubitalis (Lec.), Blacksmith Fork Canyon, June 1935 (Thatcher); Ioka, August (Harmston); Logan Canyon, June (Nye); Monticello and Randlett, July (Harmston);
- L. subpilosa (Lec.). Logan, June 29, 1937 (R.E.Nye).
- L. quadricaps Csy. Logan Dry Canyon, June 1935 (Thatcher); Logan, June (W.P.Nye) (R.E.Nye); Providence 1933 (K.); Vernal, August 1935 (Harmston).
- L. alticola Csy. Logan Canyon, June 28, 1936 (W.P.Nye).
- L. suturalis Csy. Ioka, August 1935 (Harmston); Logan Canyon, June (W.P.Nye).
- Acmaeops proteus Kirby. Logan Canyon, June 13, 1937 (W.P.Nye). Also Yellowstone Lake, Wyoming, July 18, 1936 (Knowlton).
- A. nigripennis (Lec.). Charleston, July and Mt. Emmons, September 1935 (Harmston).
- Anoplodera canadensis var. cribripennis Lec. Logan Canyon, August 1935 (W.P.Nye).
- A. chrysocoma Kirby. Hayden, September 15, 1935 (Harmston); Logan, June (R.E.Nye, Roskelley); Logan Canyon (W.P.Nye); Manila, August (K.-Harmston); Roosevelt and Smithfield (Harmston).
- A. instabilis Hald. Bluebell, September 19, 1935 (Harmston); Butlerville, June (K.).
- Grammoptera subargentata Kby. Logan Canyon, June 28, 1936 (W.P.Nye). Also Gray, Idaho, July 21, 1937 (R.E.Nye).

- Leptura propinqua Bland. Beaver Creek, Logan Canyon, August 22, 1937 (Davis); Providence Lake, July 27, 1936 (R.E.Nye).
- Typocerus balteatus Horn. Bennett, July 10, 1935 (Harnston); Monarch, September 3, 1937 (K.-Harnston).
- Molorchus lonicollis Lec. Pseudotsuga taxifolia, Logan, April 12, 1936 (Thatcher); Logan Canyon, April 26, 1936 (W.P.Nye).
- Rosalia funebris Mots. Logan, August-September (W.P.Nye); Oak Creek Canyon (Jeppson).
- Sarcophus ligneus var. aquila Csy. Leeds, April 11, 1936 (Smith); Logan, April (K.); Tridell, September (Harnston). Also Franklin, Idaho July 1936 (Harnston).
- S. nicolas White. Damaging alpine fir logs at Blacksmith Fork Canyon, June 16, 1935 (Thatcher); Logan Canyon April 4, 1936 (W.P.Nye).
- Callidius californicus Csy. Logan. Also Riverdale, Idaho (K.-Smith).
- C. juniperi Fisher. Logan Canyon, May 12, 1936 (C.J.Davis).
- Phymatodes dimidiatus (Koy.). Logan, May 11, 1937 (Davis).
- P. varius (Faor.). Farmington, June 23, 1935 (E. W. Anthon).
- P. maculicollis Lec. Logan Canyon, April 26, 1936 (W.P.Nye).
- Xylotrechus colonus (Fabr.). Curren Creek, September 16, 1936 (Harnston).
- X. normus Lec. Smithfield, July 11, 1937 (C.F.Smith).
- X. undulatus (Say). Roosevelt, July 15, 1935 (F.C.Harnston).
- X. annosus Say Curren Creek, June 11, 1933 (K.); Logan, July 1931 (Linford); Damaging aspen trees, Logan Canyon, June 13, 1937 (W.P.Nye); in willow, Slaterville, May 1935 (K.-Thatcher). Also Franklin, Idaho, July 24, 1936 (Harnston).
- X. obliteratus Lec. Boneta, September 14, 1935 (Harnston).
- X. munrocheri Van Dyke. Logan, June 6, 1936 (R.E.Nye).
- X. abietis Van Dyke. In Pinus contorta at Logan Canyon, August 1, 1937 (Davis); August 1938 (W.P.Nye). Also Beaver Creek, Idaho, August 29, 1938 (W.P.Nye).
- X. albopictus Csy. Beaver Creek, Logan Canyon, August 22, 1937 (Davis).
- Noctylus caprea (Say). Green Canyon, December 20, 1936 (Thatcher); Logan, July 10, 1936 (C.J.Sorenson); Logan Canyon, June 27, 1937 (W.P.Nye).
- N. muricatus (Kirby). Logan, July 30, 1936 (K.); Providence, Smithfield (Davis).
- Stenaspis solitarius (Say). Roosevelt, July 11, 1935 (Harnston).
- Tradition coquus var. fulvipennis (Say). Roosevelt, August 1935 (Harnston).
- Oxoplus corallinus Lec. Monticello, September 5, 1937 (Knowlton).
- O. jocosus Horn. Large numbers on Chrysothamnus at Arcadia, July 3, 1935 (Harnston); Blanding, August 18, 1936 (K.-Smith); Huntington and Kanab, August 1936 (K.); Moab, (K.-Smith).
- Crossidiusator Lec. Cedar Springs, August 30, 1929 (Knowlton); Logan, August 21, 1934 (Thatcher); also Arimo, Idaho, August 27, 1934 (Gunnell).
- C. pulchellus Lec. Blacksmith Fork, August 22, 1937 (Harnston); Bluff, September 3, 1937 (K.-Harnston); Logan Canyon, July 4, 1936 (Harnston).
- C. allgewahri Lec. Kanab, July 1936 (Harnston); Monarch, September 1937 (K.-Harnston); Lyton, September (Harnston), August (Sorenson); Showell (K.).
- C. wickhami Csy. Logan, July 1930 (Knowlton).
- C. glandi Casey. Hayden, September 1935 (Harnston); Logan Canyon, July 1936 (K.).
- C. hirsuticollis Csy. Logan, August 24, 1935 (W.P.Nye).
- Batyia ignicollis (Say). Boneta, August (Harnston); Ft. Duchesne (Stoffers).
- Monailana shantzi Casey. Hooper, July 18, 1936 (R.C.Roskelley).
- Monochamus maculosus Hald. Logan, April 27, 1934 (Smith) Logan Canyon, August, and Mt. Hone, September 1935 (Harnston). Also Bonanza, Idaho, August 28, 1935 (A.D.Smith).
- M. oregonensis Lec. Beaver Creek, August 1, 1937 (W.P.Nye); LaPoint, September 1936 (Harnston); Logan, March 1934 (Roskelley); Logan Canyon, September (W.P.Nye-Davis); Ouray, July (Harnston). Also Ashton, Idaho, August 1, 1933 (R.J.Costeley); Beaver Creek, Idaho, August 29, 1937 (W.P.Nye).

- Hyperplatys nontanus Casey. Salt Lake City, May 31, 1938 (K.-Harnston).
H. aspersus (Say). Whiterocks, July 16, 1935 (Harnston).
Acanthocinus obliquus (Lec.). Uintah Canyon, June 13, 1937 (Harnston).
Pogonocherus pictus Fall. West Woodruff, mountains, July 5, 1935 (Knowlton).
P. oregonus Lec. In Alpine fir, Logan Canyon, October 11, 1936 (W.P.Nye).
Saperda harni Joutel. In Populus angustifolia; Farmington, June 19, 1937 (Hardy);
 Park Valley, April 20, 1934 (Roskelley); Sardine Canyon, June 26, 1936 (Knowlton).
S. calcarata var. adspersa Lec. Farmington, July 22, 1937 (Knowlton-Dorst).
S. concolor Lec. In Populus angustifolia. Hooper, June 30, 1937 (Hardy); Logan Canyon, June 28, 1936 (W.P.Nye).
Oberon perspicillata Hald. Payson, July 31, 1937 (Knowlton); Sardine Canyon, June 3, 1937 (Harnston).
O. montana Casey. Granite, June 10, 1936 (Knowlton-Allen).
Tetrasoma flavolatus var. monticola Casey. Logan, August 17, 1936 (W.P.Nye); North Logan, July 14, 1937 (Smith-Harnston). Also Preston, Idaho, July 11, 1937 (Smith-Harnston).
Polisenus oregonus Lec. Smithfield Canyon, July 11, 1937 (Harnston).

Family SCOLTYIDAE - Bark Beetles 4/

- Scolytus rugulosus Ratz. The shot hole borer was found damaging peach, apple and wild choke cherry trees at Brigham, August 7, 1932 (K.-M.J.Jmes), and June 13, 1936 (G.S.Steins); Davis County Farm, Farmington, June 13, 1936 (Anthon), and June 13, 1935 (F.H.Gunnell); Green Canyon, Cache County, June 1, 1936 (W.P.Nye); Logan, August 3, 1932 (B.G.Whitaker, J.H.Linford); River heights, August 31, 1935 (T.O.Thatcher); and Salt Lake City, May 23, 1936 (Knowlton).
S. wickhami Blkm. Found attacking Pseudotsuga taxifolia in large numbers at Blacksmith Fork Canyon, June 16, 1935 (Thatcher); Logan Canyon, March 14, 1937 (W.P.Nye).
S. monticolae Sw. Under bark of Pseudotsuga mucronata at Logan Canyon, September 1, 1934 (Thatcher).
S. opacus Blkm. Attacking Pseudotsuga mucronata at head of Spring Hollow, Logan Canyon, September 19, 1934 (Thatcher).
S. ventralis Lec. Zion National Park, March 1, 1935 (Thatcher).
S. unispinosus Lec. Blacksmith Fork Canyon, June 6, 1935 (Thatcher).
Crypturgus borealis Sw. Found in Abies lasiocarpa, Logan Canyon, June 1934 and October 1936 (Thatcher); October, 1936 and August 1938 (W.P.Nye).
Renocis heterodoxus Csy. Attacking Cercocarpus ledifolius or mountain mahogany and Prunus melanocarpa or service berry in large numbers, Blacksmith Fork Canyon, June 16, 1935; Logan Canyon, October 10, 1934 (Thatcher); and March 7, 1937 (W.P.Nye).
Dendroctonus monticolae Hopk. The mountain pine beetle is of economic importance in the Rocky Mountain region, attacking and killing large numbers of Pinus contorta or lodge pole pine. Specimens were collected in Logan Canyon, October 1934 (Thatcher) and October 1936 (W.P.Nye).
D. pseudotsugae Hopk. The Douglas fir beetle attacks and kills large numbers of Pseudotsuga taxifolia every year; Logan, May 14, 1931 (Thomas); Logan Canyon, May 15, 1933 (Knowlton). Also Cody, Wyoming, April 22, 1935 (Thomas).
D. valens Lec. The red turpentine beetle was collected at Logan, July 9, 1906 (E.G.Titus); Spanish Fork, July 10, 1937 (Knowlton-Dorst).
Phloeosinus hoppingi Sw. Bear River Narrows, Idaho, 1933 (C.F.Smith).
P. utahensis Sw. Logan, on cedar, August 28, 1929 (H.J.Pack).

4/ The writers are indebted to M. W. Blackman and T.O.Thatcher for the identification of much of the material here recorded.

- Hylastinus obscurus Marsh. The clover root borer, in alfalfa at Tremonton, April 12, 1938 (K.-Harmston); Trenton, May 15, 1930 (Knowlton).
- Pseudohylesinus grandis Sw. Blacksmith Fork Canyon, June (Thatcher).
- Trypodendron rufitarsis Kby. Minidoka National Forest, Idaho, May 28, 1936 in Pinus contorta (Thatcher).
- Cryphalus ruficollis Hopk. Logan Canyon, September 9, 1934 (Thatcher).
- Conophthorus monticolae Hopk. Coeur-d'Alene, Idaho, August 9, 1936, in cones of Pinus monticolae (Thatcher).
- C. flexilis Hopk. Logan Canyon, October 1936 in Pinus flexilis (W.P.Nye).
- Pityophthorus pseudotsugae Sw. Taken in large numbers from Abies lasiocarpa or alpine fir at Card Canyon, August 19, 1937 and Logan Canyon, June and September, 1934 (Thatcher).
- P. gracilis Sw. Beaver Creek of Logan Canyon, June 28, 1937 in Pinus contorta or lodgepole pine (A.D.Smith).
- P. exilis Sw. Found in Pinus contorta at Beaver Creek of Logan Canyon, August 1, 1937 (W.P.Nye); Logan Canyon, October 28, 1934 (Thatcher).
- P. burkei Blkm. Beaver Creek of Logan Canyon, June 28, 1938 in Pinus contorta (A.D.Smith).
- P. virilis Blkm. Riverheights, June 1935 in Rhus trilobata (Thatcher).
- P. confertus Sw. Beaver Creek of Logan Canyon, August 1, 1937 in Pinus contorta (W.P.Nye); Trout Creek, May 1934 P. monophylla (Thatcher).
- P. tuberculatus Eich. Logan Canyon, October 1936 in Pinus contorta (W.P.Nye).
- Pityogenes fossifrons Lec. Fauve Lake, Ruby Mountains, Nevada, July 12, 1934 (H.B.Stafford).
- P. knechteli Sw. Logan Canyon, August 1937 (W.P.Nye). Also in Pinus contorta at Beaver Creek, Idaho, August 1937 (W.P.Nye).
- Ips radiatae Hopk. In Pinus contorta at Beaver Creek of Logan Canyon, June 1937 (A.D.Smith, W.P.Nye).
- I. latidens Lec. Beaver Creek, June 1937 in Pinus contorta (A.D.Smith); Logan Canyon, October 1937 (Thatcher), April 1936 in Pinus flexilis (R.E.and W.P.Nye), and April 1936 in Pinus contorta (W.P.Nye).
- I. integer Eich. Fish Creek, Montezuma, Colorado, May 12, 1938 in Pinus ponderosa (J.B.Titus).
- I. oregoni Eich. Large numbers in Pinus contorta at Beaver Creek, June 1937 (A.D.Smith), August 1937 (W.P.Nye); Logan Canyon, October 1934 (Thatcher), August 1937 (C.F.Smith-Harmston-W.P.Nye); Wolf Creek Pass, August 15, 1937 (K.-Harmston). Also Beaver Creek, Idaho (W.P.Nye).
- I. chamberlini Sw. Logan Canyon, October 21, 1934 in Pinus contorta (Thatcher).
- Pityokteines minutus Sw. Found in Pseudotsuga taxifolia and Abies lasiocarpa in large numbers at Card Canyon of Logan Canyon, June 6, 1937 (W.P.Nye); Logan Canyon, August and October (W.P.Nye); Providence Canyon, September (Thatcher).
- Dryocoetes confusus Sw. Damaging Abies lasiocarpa in Logan Canyon, September-October 1937 (Thatcher, W.P.Nye).

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Utah Agricultural Experiment Station
Mimeograph series 200 (Tech). Part 4

UNIVERSITY OF ILLINOIS

March 1939

UTAH HYMENOPTERA 1/

George F. Knowlton and Fred C. Harmston 2/

From the standpoint of the agriculturist the Hymenoptera constitutes one of the most important orders of insects. Several families of the order are known to be entirely parasitic and other hymenopterous families contain many beneficial predatory insects.

Many Hymenoptera excel in the work of pollinization of plants. The group as a whole may be considered beneficial.

Superfamily TENTHREDINOIDEA

- Anaaronematus lineatus Harrington. Blacksmith Fork Canyon, May 12, 1929.
Ametastegia recens (Say). Sardine Canyon, August 8, 1937.
Caliroa cerasi (L.). Bountiful, June 4, 1929 (H.J.Pack).
Cephus cinctus Nort. The western grass-stem sawfly attacks various wild grasses, timothy, wheat and barley in various parts of Utah. Huntsville, June 12, 1937; Logan; Mantua (C.J.Davis); Salina.
Cimbex americana Leach. Roosevelt, September 22, 1936.
Diphadnus appendiculatus (Hartig). Gooseberry sawfly injury to gooseberries and currants was observed in Utah during 1938.
Dolerus collaris Say. The timothy sawfly larvae feed on timothy. Eden, May, 1937.
D. coloradensis Cr. Park Valley, May 2, 1934 (R.C.Roskelley).
D. elderi Kinc. Benjamin, July 31, 1937.
D. similis (Nort.). Eden, May 1935; Kinball; Mantua (C.J.Davis); Sunset.
Eriocampoides lincina Retz. Larvae of the pear slug damage the foliage of cherry, pear, plum, hawthorn and mountain ash each year in Utah.
Hartigia cressonii (Kirby). The raspberry horntail was collected at Blacksmith Fork Canyon, June 20, 1937. Young tip growth of raspberries, blackberries and loganberries may be mined by this pest.
Pteronides ribesi (Scopoli). The imported currant worm probably occurs in Utah upon currants and gooseberries.
Sirex californicus (Asm.). Bonanza, Idaho, August 28, 1935 (A.D.Smith).
S. juvenis cyaneus (F.). The polished horntail attacks various conifers. Ogden, September 14, 1934 (C.J.Davis). Also taken at Ashton, Idaho, September 12, 1933 (R.J.Costley).
Sterictiphora lineata (Roh.). Brigham, September 10, 1929; Farmington; Hooper; Lehi; Murray; Ogden; Riverdale; West Weber. Also at Preston Idaho, July 29, 1927.
S. zabriskie (W.-M.). Brigham, September 10, 1929; Farmington; Hooper (D.E.Hardy); Logan; Murray; Ogden; Riverdale; Riverside; West Weber; Willard. Also at Preston, Idaho, July 29, 1927.
Tenthredo alienatus (Roh.). Yellowstone Lake, Wyoming, July 18, 1936 (Knowlton).
T. maximus (Nort.). Castle Dale, September 24, 1935 (C.J.Sorenson).

1/ The writers are indebted to C. F. W. Muesebeck, R. A. Cushman, A. B. Gahan, T. H. Frison, C. E. Mickel, T. B. Mitchell, A. C. Cole, H. H. Ross, M. R. Smith, H. A. Scullen, C. D. Michener, Grace Sandhouse and C. F. Smith for identifying nearly all of the material here recorded.

2/ Unless otherwise indicated, material was collected by one or both of the writers and in Utah. This part 4 of "INSECTS OF UTAH".

- T. xantha (Nort.). Provo, June 9, 1910 (T.Spalding). Also at Cody, Wyoming (W.L.Thomas).
Trenex columba (L.). The pigeon tremex attacks various coniferous trees. Hooper, September 19, 1937 (D.E.Hardy); Jensen; Oak Creek Canyon (Lee Jeppson).
Urocerus albicornis (F.). Ft. Duchesne, August 20, 1926 (C.J.Sorenson).
U. flavicornis (F.). Breeds in pine, Douglas fir and other conifers. Hooper, July 3, 1935 (C.G.Hooper). Also at Ashton, Idaho, (R.J.Costley).
Zaraca americana Cr. Logan, April 24, 1910; Mill Creek Canyon, May 30, 1934 (H.B.Stafford).

Family BRACONIDAE - Braconid Flies 2/

- Apanteles aristoteliae Vier. Reared from strawberry leafroller, Pleasant Grove, July 5, 1937 (Knowlton-L.L.Hansen).
A. laeviceps Ashm. Pleasant Grove, July 3, 1937 (Knowlton-L.L.Hansen). Parasitic upon the cabbage looper and sugar-beet webworm.
A. limentoides (Riley). Paratizes the alfalfa caterpillar in Utah.
A. yukutahensis Ashm. Parasitic on cutworm in Utah.
Chelonus phthorimaeae Gahan. Reared from strawberry leafroller larvae, Pleasant Grove, 1937 (Knowlton-Hansen).
Diaretus salicaphis Fitch. Reared from the aphid, Periphyllus pomulicola (Thos.), Salt Lake City, August 26, 1938 (Knowlton).
Eubadizon pleuralae Cress. Reared from strawberry leafroller, Brigham 1938 (K.).
Microgaster comptanae Vier. Reared from strawberry leafroller larvae, Hobbie Creek, July 11, 1936 (Knowlton).
Oncophanes atriceps (Cush.). Reared from strawberry leafroller larvae, Hyrum, July 17, 1938 (Knowlton-W.P.Nye).
Trioxys coruscans Gahan. Reared from the aphid, Macrosiphum jonesii G.P., Monte Cristo, August 25, 1938 (Knowlton).
T. cupressicola Gahan. Reared from the aphid, Minuticornis gravidis Knlt., Logan, 1935 (Knowlton).

Family ICHNEUMONIDAE - Ichneumonid Flies

- Epiurus bicoloripes Ashm. Reared from strawberry leafroller larvae, North Logan, July 20, 1938 (Knowlton-W.P.Nye).
Microgaster lunator icterosticta Mich. Roosevelt, July 7, 1938; Salt Lake City, 1935 (Stafford); Tooele, June 1938 (Hansen).
Rhyssa alaskensis Ashm. Smithfield, July 18, 1937 (W.P.Nye).

Family CHALCIDIDAE

- Asaphes californicus Gir. Reared from the aphid, Macrosiphum escalantii Knlt., Monte Cristo, August 25, 1938 (Knowlton).
Pachyneuron siphonophorae Ashm. Reared from the aphids, Capitophorus bitrichus K.-S. and Aphis nigriregalis Knlt; Hyrum, August 9, 1938 (Knowlton).

Family PSALMOCHARIDAE - Spider Wasps

- Priocnemis comparatus Sm. Collinston, March 28, 1931.

Family CHRYSIDIDAE - Cuckoo Wasps

- Chrysis (Tetrachrysis) anala Roh. Josepa, August 27, 1929 (K.-Bowen).

2/ For further information on Utah Braconidae and Ichneumonidae, see: Knowlton, G.F. and Hammon, F.C., Some Entomophagous Utah Hymenoptera, Proc. Utah Acad. Sci. Arts and Let, Vol. 16, 1939.

- C. (T.) coeruleans F. Dry Lake, July 5, 1939 (K.-Bowen); Logan.
- C. (T.) decepta Roh. Snowville, July 5, 1932.
- C. (Gonochrysis) densa (Cresson). Eureka, July 11, 1911 (T. Spalding); Provo, June 6, 1910 (S.).
- C. (Tetrachrysis) dorsalis Aaron. Corinne, June 27, 1929 (K.-Bowen); Delle; Logan; Promontory; Snowville.
- C. (T.) florissanticola Roh. Logan Canyon, June 18, 1912 (H.R.Hagan).
- C. (T.) inflata Aaron. Logan.
- C. (T.) montana Aaron. Corinne, June 22, 1929 (K.-Bowen); Promontory.
- C. (T.) perpulchra Cresson. Park Valley, July 11, 1929; Timpie.
- C. (T.) propria Aaron. Logan, June 25, 1906.
- C. (T.) pulcherrima Cr. Logan.
- C. (T.) submontana Roh. Logan, June 21, 1906.
- C. (Holochrysis) tota Aaron. Bridger Basin of Logan Canyon.

Family MUTILLIDAE - Velvet Ants

- Brachycistis melanocephala Mall. Trout Creek, July 23, 1933 (H. B. Stafford).
- B. washingtona Mall. Trout Creek, July 23, 1933 (Stafford).
- Dasytmilla abdita Mickel. Lamo, July 22, 1932; Logan Canyon, July 11, 1935 (R. E. Nye); Wellington, July.
- D. californica (Raas.) Avon. August 19, 1920 (King); Logan, July.
- D. caneo (Brake). Ft. Duchesne, August 20, 1932 (F. K. Stoffers).
- D. fulvohirta (Cress.) American Fork, July 21, 1926 (H.F.Thornley); Blacksmith Fork Canyon, June 11, 1926; Blanding; Cove, September 23, 1938; Ft. Duchesne; Heber; Hyrum; Indianola; Manila; Oak Creek Canyon; Roosevelt; Vernal; June-September. Occurs throughout Utah.
- D. gloriosa Saus. Logan, 1925; Middleton, June 26, 1933.
- D. klugii Gray. American Fork, August 24, 1903; Logan, August 23, 1936 (W.P.Nye); Vernal, July 29, 1932 (C. J. Sorenson).
- D. monticola (Cress.) Ft. Duchesne, July 15, 1932 (L. Cutler).
- D. scitula Mickel. Logan, August 3, 1931 (W.L.Thomas); Orr's Ranch, September 19, 1932 (Thomas); Park Valley, July 2, 1932 (K.-Janes); Trout Creek, July 25, 1933 (H.B.Stafford).
- D. ursula Cress. Boneta, July 17, 1938; Granite, August 2, 1935 (M.W.Allen); Lamo, July 7, 1931; Lehi, August 8, 1935 (H.F.Thornley); Roosevelt, May (Sorenson) and Vernal, July 1932 (Sorenson).
- D. vesta Cresson. Lamo, July 19, 1934 (K.-Smith); Logan, September 5, 1935 (R.E. Nye); Myton, June 17, 1936.
- Photopsis abdominalis (Blake). Granite, July 16, 1935 (M.W.Allen).
- P. concolor Cress. Clinton, June 23, 1936; Granite, June 23, 1936 (Allen); Layton, June 19, 1936; Logan and Spanish Fork, June 19, 1936.
- P. eribus (Mel.). Manila, August 11, 1937.
- P. inconspicuous (Blake). San Rafael Swell, September 12, 1937 (W.P.Nye).
- P. mellicornis Becker, Ft. Duchesne, August 11, 1937; Granite, June 23, 1936 (Allen); Roosevelt, August 11, 1937.
- P. venustus Blake. Granite, August 3, 1935 (Allen); Roosevelt, August 14, 1937.
- Pseudomethoca contumax Cress. Lehi, June 20, 1936 (Thornley).
- P. contumeliosa Mickel. Lehi, July 8, 1936 (Thornley); Snowville, May 1, 1933 (E.W.Anthon).
- P. propinqua Cress. Moab, July 28, 1938.
- P. toumeyii Fox. Lamo, September 19, 1934 (K.-C.F.Smith).
- Timulla grotei Blake. Midvale, July 16, 1936 (K.-M.J.Janes); Monarch, June 30, 1935; Trenton, August 1931 (W.L.Thomas).

Family SPHECIDAE - Thread-Waisted Wasps

- Astata bicolor Say. Cornish, August 19, 1931 (K.-Janes).
A. nevadica Cress. Snowville, July 6, 1930; Timpie, August 1929.
A. nubecula Cress. Corinne, July 13, 1929 (K.-Bowen).
A. occidentalis Cress. Blue Creek, August 17, 1931.
Bembex connexa Fox. Richmond, September 1, 1926.
B. similans Fox. Grantsville, August 21, 1931.
Cerceris conifrons Mickel. Blue Creek, June 29, 1932; Cedar Springs, July 29, 1931.
C. convergens V.-C. Blue Creek, August 17, 1931; Corinne, Hardup, Hyrum and Timpie, July-August, 1930.
C. finitima Cr. Corinne, June 27, 1929 (K.-Bowen).
C. flavocincta Cr. Strawberry Valley, July 16, 1933 (E.W.Anthon).
C. nigrescens Sm. Analsa, August 31, 1927; Hyrum, Lehi, Midvale August 1937.
Chlorion atratum Lep. Lamo, July 11, 1931; Logan, August 27, 1929 (K.-Bowen).
C. pubedorsum Cost. Lamo, July 17, 1931.
Didineis sanctacrucae Brad. Draper, August 23, 1931.
Philanthus cockerelli Dunning. Logan, September 5, 1923.
P. multiraculatus Cam. Blue Creek, July 24, 1931; Provo, July.
P. quadrinotatus Ashm. Cornish, August 19, 1931.
Psen cressoni Pack. Corinne, June 24, 1937.
Spheg arvensis Dahl. Snowville, June 7, 1930.

Family COLLETIDAE

- Colletes annae Ckll. Northern Utah (Knowlton).
C. compactus Cr. Granger September 4, 1931.
Prosopis cressonii mesilae Metz. Spring Canyon, August 28, 1935.

Family HALICTIDAE - Sweat Bees

- Agapostemon angelicus Ckll. Garfield, July 1, 1931; Iosepa, August 27, 1929 (K.-M.Bowen).
A. coloradensis Cwfd. Grantsville, September 4, 1931.
A. femoratus Cwfd. Cedar Springs, August 11, 1931; Corinne; Delle, Timpie and West Point, August 1930.
A. mellivontis Cress. Delle; Low and St. George, August 1930.
A. texanus Cress. Bountiful, June 25, 1929 (H.J.Pack); Hooper, August.
Halictus accentus Sandh. Providence, August 27, 1925.
H. albohirtus Cwfd. Snowville, May 24, 1930.
H. incompletus Cwfd. Snowville, July 15, 1930.
H. lerouxii Lep. Salt Lake City, July 25, 1927.
H. ligatus Say. Brigham, September 12, 1924; Lewiston, August.
H. nigrescens Cwfd. Snowville, May 24, 1930.
H. oculatus Sandh. Northern Utah.
H. provancheri D. T. Snowville, June 7, 1930.
H. ruinosiformis Cwfd. Richfield, June 27, 1929.
H. tripartitus Ckll. Snowville, June 7, 1930.
Nomia acus Ckll. Northern Utah.
N. californica Ckll. Delta, July 12, 1930 (L.F.Clark); Ft. Duchesne, Mendon and Springville, June-August 1936.
N. melanderi Ckll. Iosepa, August 27, 1929 (Knowlton-M.F.Bowen).

Family ANDRENIDAE - Acute-Tongued Burrowing Bees

Andrena caerulea var. territa Ckll. Northern Utah.

A. piperi Vier. Blue Creek, June 7, 1930.

A. prunorum Ckll. Heber, May 12, 1931; Iosepa, July 24, 1932; Jensen and Wolf Creek Pass, September 2, 1937.

Family PANURGIDAE

Nomadopsis scutellaris Fowler. Lake Point, June 29, 1932; Lehi and Magna.

Perdita zebrata Cress. Magna and Showell, August 1929.

Pseudopanurgus aethiops Cress. Collinston, August 20, 1926; Newton, 1930.

Family NOMADIDAE - Cuckoo Bees

Epeolus utahensis Ckll. Collinston, August 20, 1926.

Nomada cymbalariae Ckll. Fruitland, March 10, 1932.

Triepolus denverensis Ckll. Brigham, September 12, 1935.

Family ANTHOPHORIDAE - Anthophorid Bees.

Anthophora floxipes Cress. Provo, July 24, 1912 (T. Spalding).

A. neomexicanus Ckll. Teasdale, June 26, 1926.

A. urbana Cress. Cedar Valley, August 30, 1934; Clive, Iosepa, Magna and Mills.

Centris cockerelli Fox. St. George, May 24, 1919.

Clisodon terminalis Cress. Logan, August 29, 1907 (E.G. Titus).

Diadasia enervata Cress. Promontory, August 30, 1929.

Melecta californica Cress. Vernal, June 5, 1926.

M. fulvida Cress. Garland, May 7, 1934; Logan, May 19, 1937 (R.E. Nye).

Family MEGACHILIDAE - Leaf Cutting Bees

Work of leaf cutter bees often is observed upon the foliage of rose bushes and apple trees. The pieces cut from the leaves are used to line the nests.

Anthemois relativa Cress. Richmond, August 11, 1932.

Anthidium tenuiflorae Ckll. Logan, August 30, 1936.

Argyropile nebraskana Mitchell. Moab, June 18, 1933.

A. parallela Sm. Bothwell, July 29, 1929; Ft. Duchesne, June 15, 1936; Hyrum, September 13, 1935; Jensen, Logan and Naples.

Ashmeadiella denticulata Cress. Ft. Duchesne, July 16, 1932; Thatcher and St. George, July.

Derotropis semilaurita Mitch. Dolomite, May 18, 1934.

Dianthidium sayi Ckll. Trenton and Wellsville, August 28, 1930.

Lithomegachile brevis var. onobrychidis Ckll. Brigham, July 15, 1937; Hinckley, August 8, 1936 (Sorenson); Oak City, July 5, 1914 (Jones).

L. coquillettii Ckll. Five Points, July 22, 1930; Logan, July 1, 1933 (L. Green); St. George, May 29, 1930.

L. mendica Cress. Farmington, June 13, 1934 (C.F. Smith).

L. mendica snowi Mitch. Salt Lake City, August 15, 1938.

L. texana cleonis Ckll. Green River, June 18, 1933; Meadow, June 1935.

L. texana lippiae Ckll. Middleton, June 26, 1933.

Megachile hookeri Ckll. Grantsville, September 15, 1931.

M. latimanus Say. Trenton, September 15, 1926.

M. pugnata Say. Teasdale, June 26, 1926.

Monumentella albifrons (Eby.) Trout Creek, May 7, 1934 (H.B. Stafford).

Osmia lignaria Say. Grantsville, April 17, 1934 (K.-W.L. Thomas); Logan, April 6, 1933 (J.A. Mencham).

Sayapis pugnata Say. Springville, July 11, 1933 (E.W. Anthon).

Xanthosarus dentitarsus Slad. Bluff, September 5, 1937; Roosevelt, June.

- X. perihita Ckll. Ft. Duchesne, June 16, 1935; Iosepa, August 1, 1936; Lehi, June 6, 1937; Logan, August 20, 1933.
Xeromegachile bradleyi Mitch. Orr's Ranch, September 11, 1935.
X. hilata Mitch. Logan, July 20, 1931.
X. hookeri Ckll. Deseret, September 9, 1938 (L.L. Hansen).
X. nevadensis Cress. Leeds, November 12, 1938; Utah, September 1937.

Family BOMBIDAE- Bumblebees

- Bremus appositus Cress. Blacksmith Fork and Logan Canyons, August 1907 (Titus); Salt Lake City, July 1936.
B. bifarius Cress. Logan, Round Valley, Salt Lake, July-August 1904-1908 (Titus).
B. centralis Cress. Logan, July 1921 (G. E. King).
B. edwardsii Cress. Logan and Spring Canyons, August 1925.
B. huntii Greene. Cornish, July 30, 1929; Trenton.
B. huntii rufosuffusus Ckll. Cache Junction, June 3, 1912 (Hagan).
B. morrisoni Cress. Logan and Provo, July 1907-1909 (E. G. Titus).
B. occidentalis Greene. Cove, August 1925; Logan, August 18, 1912 (Hagan).
B. nevadensis Cress. Logan, July 23, 1909 (Titus-Hoff).
B. rufocinctus prunellae Ckll. Porter. Logan, May 19, 1924.
Psithyrus insularis Sm. Ephraim, August 10, 1904; Logan, July 24, 1926.

ANTS ASSOCIATED WITH APHIDS

George F. Knowlton

- Apilaenogaster subterranea occidentalis Emery. Attending Prociophilus sp., on roots of oak, Holladay, May 22, 1935 (Knowlton).
Dorymyrex pyramicus Roger. Attending Aphis helianthi Mon., on sunflower, Granite, August 27, 1935 (Knowlton). Also at Beaver Dam, Arizona, with Chaitophorus populella G.-P. on Salix. April 25, 1935 (K.). Also found with Kakima cerei G.-P. and Aphis neomexicanus Ckll. on red currant at Rocky Mountain National Park, Colorado, August 23, 1935 (Knowlton); Aphis chrysothamni Wilson, on Chrysothamnus at Riverdale, Idaho, August 5, 1935 (C.F. Smith).
Formica cinerea Mayr. Associated with Microsiphum artemisiae (Gill.) on Artemisia vulgaris at Wasatch, September 1, 1937 (Knowlton-Harmston).
F. criniventris Whlbr. With Macrosiphum ambrosiae F., on Chrysothamnus nauseosus at Boulton, September 12, 1935 (Knowlton).
Formica fusca var. arantae Whlbr. Attending Rhopalosiphum rubiphila (Patch) and Aphis rubicola Thos., on raspberry at Hooper, June 3, 1935 (Knowlton-Smith); Macrosiphum atripes G.-P. on goldenrod, West Weber, June 3, 1935 (K.-Smith); Cinara taxifolia (Sw.), on Pseudotsuga, Blacksmith Fork Canyon, June 4, 1935 (T.O. Thatcher); Aphis neomexicanus Ckll. on currant, Plain City, June 3, 1935 (K.-S.) Also taken in Idaho at Rexburg with Macrosiphum coreni (Hunter), on Artemisia, June 16, 1935 (Smith); Aphis knowltoni H.-F., on corn, Riverdale, September 1, 1935 (Smith). At Lay and Craig, Colorado with Aphis filifoliae G.-P. and Aphis fragilis Kuhl. on Chrysothamnus nauseosus, August 18, 1935 (K.).
F. fusca var. gelida Whlbr. With Aphis canne Will. on Artemisia tridentata at Pleasant Grove, August 14, 1937 (K.); Aphis cardui L. on bull thistle at Thatcher, July 10, 1934 (K.-Smith); Macrosiphum solanifolii (Asim.), Amphorophora nervata (Gill.), Captiophorus potentillae (Walk.) and Macrosiphum dirhodum (Walk.) on rose at Hooper, June 3, 1935 (K.-Smith); with Macrosiphum coweni Hunt., on Artemisia at Taylor, June 3, 1935 (K.-Smith); Aphis pomi DeGeer, on Hawthorn at Plain City, June 3, 1935; Chaitophorus populifoliae Oest., on Populus, Mt. Carmel, June 18, 1935 (K.); Aphis helianthi Mon. on sunflower, Richmond, June 21, 1935 (Smith). Also at Clifton, Idaho, with

Periphyllus negundinis (Thos.), on boxelder, June 21, 1935 (Smith).

F. fusca var. neorufibarbis Emer. With Aphis cardui L., on canadian thistle, Riverside, June 26, 1935 (Smith-Rowe); Lachnus salignus (Gmelin), on Salix bark, Big Cottonwood Canyon, August 22, 1935 (Smith); Aphis medicaginis Kalt., on Rumex crispus, Honeyville, June 1937 (K.); Chaitophorus nigrae Oest., Brigham Canyon, June 3, 1937 (K.-S.); Chaitophorus viminalis Mon. on Salix at Roy, May 13, 1935 (K.); Aphis medicaginis Kalt., on rhubarb at Hooper, June 3, 1935 (K.-S.); Rhopalosiphum prunifoliae (Fitch), on apple, Hobbie Creek, June 13, 1935 (K.-C.J.Sorenson); Aphis filifoliae G.-P., on Artemisia tridentata at Paragonah, June 14, 1935 (K.); Capitophorus ribis L., on red currant, Farmington and Summit, June 1935 (K.); Monellia caryae (Mon.), on black walnut, Holden, June 14, 1935; Capitophorus ribis L.; on Capitophorus elongatus Knlt. Chrysothamnus nauseosus at Parowan, June 15, 1935 (K.); Aphis frangulae Kalt., on Nepeta catara, Newton, June 27, 1935 (K.-Rowe-Smith); Capitophorus xanthii (Oest.), on cockle bur at Bear River City, July 1935 (K.-Smith). Also taken in Idaho at the following localities: Clifton, on burdock with Aphis middletoni Thos., June 1935 (Smith); Periphyllus populicola (Thos.) at Riverdale, on cottonwood, June 1935 (Smith); Aphis chrysothamni Wils., on Chrysothamnus, Preston, June 21, 1935 (Smith); Clavigerus bicolor (Oest.) on Salix bark, Strawberry Canyon, August 11, 1935 (Smith).

Formica fusca var. subaenescens Emery. Associated with Anocia querci (Fitch), on Cornus sp. at Hanna, September 2, 1937 (K.-Harmston). In Colorado at Pingree Park with Periphyllus populicola (Thos.) on Populus tremuloides, August 21, 1935 (K.). Also in Idaho at Clifton, with Pterocomma populea (Kalt.) on Populus, June 21, 1935 (Smith).

Formica manni Whlr. With Aphis cardui L., on Carduus lanolata, Logan, June 9, 1935 (Thatcher); Periphyllus salicicorticis (Essig), on Salix, Santa Clara, June 16, 1935 (K.); Aphis menthae-radialis Cow., on spearmint, Santa Clara, June 19, 1935 (Knowlton).

Formica neogagates Emery. With Forda olivacea Roh., on roots of Bromus tectorum, Logan, June 2, 1935 (K.); attending Capitophorus gregarius K. on Chrysothamnus parryi at Sevier, June 19, 1935 (Knowlton).

Formica oreas Whlr. With Macrosiphum longipies G.-P. on Artemisia, Blacksmith Fork Canyon, June 9, 1935 (Smith-Rowe); Macrosiphum coweni H. on Artemisia tridentata, Blacksmith Fork Canyon, June 9, 1935 (Smith-Rowe). Also at Pingree Park, Colorado, with Asiphum saculi Gil., on aspen, August 21, 1935 (K.-A.A.Palmer).

Formica oreas var. comptula Whlr. With Aphis rumicis L., on dock, Cornish, June 16, 1935 (Knowlton); Periphyllus populicola Thos., on Populus, St. George, April 25, 1935 (K.-Smith); with Amphorophora masoni (Kalt.) on sunflower, St. George, April 26, 1935 (K.-Smith); Aphis gregalis Knlt., on Chrysothamnus viscidiflorus, Glendale, June 18, 1935 (Knowlton).

Formica rufa subsp. obscuripes Forel. Attending Aphis chrysothamni Wils. on Chrysothamnus nauseosus, Ephraim, August 27, 1935 (K.); attending Durocapillata utahensis Knlt. on Chrysothamnus viscidiflorus, Grouse Creek, September 28, 1935 (K.); Clavigerus smithiae (Mon.) on Populus, Ogden, May 1937 (K.); Cinara oregonensis (Wil.) on Pinus, Logan Canyon, May 25, 1935, (Thatcher); Aphis hormistonii Wil., on Artemisia tridentata, Salt Lake City, June 10, 1937 (K.); Aphis cardui L., on bull thistle, Anasga, June 1937 (K.); Macrosiphum artemisiae (Gil.) on Artemisia tridentata, Coalville, September 1, 1937 (K.-Harmston); Aphis ribi-gilletti K.-A., on black currant at West Jordan, September 8, 1937 (Knowlton-Harmston); Macrosiphum escalantii K. on Chrysothamnus parryi at Bluffdale, August 27, 1937 (K.); Periphyllus utahensis Knlt., on Salix bark, June 3, 1935, Hooper (K.-S.); Amphorophora ribicella Dav., on currant, Brigham City, June 10, 1934 (K.-Smith);

Capitophorus elongatus Knlt.

~~Capitophorus elongatus~~ Knlt. on Chrysothamnus, Fountain Green, September 15, 1935 (K.); Aphis pomi DeG., on apple at Brigham, June 3, 1935 (K.-Smith); Aphis varians Patch, on currant, Brigham, June 3, 1935 (K.-Smith); Clavigerus salicis (L.) on Salix, Hooper, June 3, 1935 (K.-Smith); Capitophorus ribis (L.) on red currant, Farmington, June 1935 (K.); Hyalopterus arundinis (F.) on plum, Orderville, June 19, 1935 (K.); Periphyllus nogundinis (Thom.) on boxelder, Ogden, June 1935 (Smith); Myzus persicae Sulzer on plum, Providence, June 19, 1935 (Smith); Aphis varians Patch, on gooseberry, Farmington, June 13, 1935 (K.); Aphis ribi-gillottae K.-S., on gooseberry, Farmington, June 11, 1935 (Knowlton); Aphis infrequens Knlt. on Chrysothamnus nauscosus, Lyman, September 20, 1935 (K.); Periphyllus utahensis Knlt. on Salix, Harrisville, June 24, 1935 (K.); Aphis frangulae Kalt., on catnip, Harrisville, June 24, 1935 (K.); Aphis helianthi Mon. on sunflower, Cedar City, June 15, 1935 (K.). Also the following Idaho records: with Macrosiphum oscalanti K. on Gutierrezia, Rexburg June 24, 1935 (Smith); Microsiphum acophorum S.-K., on Artemisia vulgaris at Riverdale, May 26, 1935 (S.); Aphis chrysothammi Wils., on Chrysothamnus at Riverdale, June 24, 1935 (K.); Aphis medicaginis L. on Malva, Rexburg, June 22, 1935 (Smith).

Formica subpolita Emery. With Microsiphum artemisiae (Gil.) on Artemisia vulgaris, Ogden, July 31, 1935 (Smith).

Formica truncicola integrioides Emery. With Aphis cardui L. on Carduus lanceolata, Logan Canyon, June 9, 1935 (T. O. Thatcher); Microsiphum artemisiae (Gil.) on sage, Boneta, August 17, 1935 (K.); Aphis chrysothammi Wils., on Chrysothamnus, Newton, May 25, 1935, (S.). Also at Rexburg, Idaho with Pterocoma populae Kalt. on Populus, June 23, 1935 (Smith).

Formica truncicola integrioides var. coloradensis Whlr. With Capitophorus glandulosa Kalt. in Daniels Canyon, August 16, 1935 (Knowlton). In Idaho at Rexburg on Populus with Clavigerus smithae (Mon.), June 1935 (Smith).

Lasius niger var. neoniger Emery. With Aphis varians Patch on Ribes, Blacksmith Fork Canyon, June 4, 1935 (T.O.Thatcher).

Lasius niger sithmonsis Perg. With Phorodon humuli (Schr.) on Prunus, Logan, June 2, 1935 (Smith); with a shiny black aphid on alder, Holladay, June 6, 1935 (K.); Aphis cerasifoliae Fitch, on chokecherry, Ogden Canyon, June 4, 1937 (K.-Smith); Chaitophorus populicola C.-P., on cottonwood in Big Cottonwood Canyon, August 22, 1935 (K.-Smith). Also at Mink Creek, Idaho, June 5, 1935 with Clavigerus bicolor (Oest.) on Salix (Smith).

Leptothorax nevadensis Whlr. With Macrosiphum zerogutierrezis S.-K. on natch brush, Gutierrezia, Blacksmith Fork Canyon, June 9, 1935 (Rowe-Smith).

Leichtopus apiculatus subsp. luctuosus Whlr. With Cinara sp. on Pinus edulis, San Rafael Swell, September 12, 1937 (W.P.Nyo).

Myrmica rubra L. With Aphis middletoni Thos. on dandelion root, Pingree Park, Colorado, August 21, 1935 (Knowlton).

M. rubra brevinodis Emery. With Aphis varians Patch on black currant, Kanabville, June 3, 1935 (Knowlton-C.F. Smith).

M. scabrinodis sulcinodoides Nyl. With Capitophorus fragaefolii Ghl. on stems of strawberry, Riverheights, July 13, 1935 (C.F. Smith).

Tapinoma sessile Say. With Lachnus salignus Gnl. on Salix at Big Cottonwood Canyon, August 22, 1935 (Knowlton-Smith).

Ant Attacks Predacious Bug.

While examining soil for grasshopper eggs at Meadow, Utah, September 23, 1938, a teneral predacious bug, Sinea diadema (Fabr.), just acquiring wings, was shaken to the ground from a small wood. The bug began to move slowly away when it was quickly seized by a passing harvester ant, Pogonomyrmex occidentalis Crosson (Det. A.C.Cole). Within 30 seconds the ant had bitten off both antennae, and in 65 seconds more it had bitten off three legs and the head.

INSECTS OF UTAH

JUL 19 1944

UNIVERSITY OF ILLINOIS

DIPTERA 1/

G. F. Knowlton, F. C. Harmston and G. S. Stains 2/

The order Diptera is of great economic importance by reason of the many pest and beneficial species which it contains. This list will add materially to the existing knowledge of the species and seasonal occurrence of Utah Diptera.

Family BLEPHAROCEPHALIDAE

Bibliocephala grandis C.S. Smithfield Canyon, July 11, 1936 (Smith-Harmston).

Family CHIRONOMIDAE - Midges, Gnats.

Cricotopus flavibasis Mall. Mendon, August 7, 1937 (Knowlton-W.P.Nye).

Chironomus utahensis Mall. Riverheights, April 19, 1937 (Knowlton).

Leptoconops torrens (Ens.). The blood sucking gnat causes annoyance to man and livestock in various Utah Localities.

L. kertszi americanus Coq. Annoys man in Utah.

Family CERATOPOGONIDAE

Culicoides crepuscularis Mall. Logan, April 29, 1938 (Knowlton-D.E.Hardy).

C. hieroglyphicus Mall. Hooper, July 14, 1937 (Hardy).

C. varipennis Coq. Newton, September 5, 1934 (Knowlton-Smith).

Dasyhelea mutabilis Coq. Logan, April 23, 1938 (Hardy).

Forcipomyia cilipes Coq. Logan, April 13, 1938 (Hardy).

Family DIXIDAE

Dixa dyari Garr. River Heights, April 19, 1934 (Knowlton).

D. sonnolenta D.-S. Panguitch, July 3, 1938 (K.-Harmston); River Heights, April 21, 1934 (K.-J.A.Rowe).

Family CECIDOMYIIDAE - Gall Midges

Rhopalomyia tridentatae Rubs. Blue Creek and Logan, April 1933 (Thomas-Thatcher).

Family MYCETOPHILIDAE - Fungus Gnats

Allodia falcata Johns. Logan Canyon, August 15, 1937 (K.-F.C.Harmston)

Exechia canalicula John. Logan Canyon, October 19, 1937 (Hardy).

Lymnophila biunctata Loew. Logan Canyon, July 25, 1937 (K.-F.C.Harmston).

M. fatua John. Logan, October 28, 1933 (T.O.Thatcher).

M. fenestrata Coq. Logan Canyon, September 5, 1937 (K.-W.P.Nye).

M. fungorum DeGeer. Logan Canyon, July 27, 1937 (K.-Harmston).

M. inculta Loew. Logan, October 27, 1937 (D.E.Hardy).

1/ The writers are indebted to C.T.Greene, D.G.Hall, Alan Stone, C.B.Philip, C.W. Curran, S.W.Bromley, C.L.Flucke, J.H.Reinhard, F.S.Blanton, R.H.Painter, M.T. James, C.R.Twinn, George Steyskal, C.W.Sabrosky, D.E.Hardy, Elizabeth Fisher, L.L.Pechuman, J.A.Rowe, F.R.Cole, A.J.Basinger and C.T.Huckett for identifying most of the material here recorded. The typing of manuscript and cutting of stencils for this report were provided through a federal NYA residence project.

2/ Unless otherwise indicated, material was collected in Utah and by one or more of the writers.

- M. monochaeta Loew. Logan, October 27, 1937 (D.E.Hardy).
M. mutica Loew. Jensen, September 3, 1937 (K.-Harnston).
M. punctata Meig. Logan, September 1, 1937 (K.-Harnston).
Phronia insula John. Ogden, June 7, 1937 (D.E.Hardy).

Family BIBIONIDAE - March Flies

- Bibio atripilosus Jms. Price, July 14, 1935 (Knowlton-Harnston); Petersburg, April 27, 1935 (Gunnell); Paradise (Knowlton).
B. albipennis Say. Very common throughout the state during May and June.
B. basalis Lw. Eden, June 4, 1937 (K.-Smith); North Fork Provo Canyon (Hardy).
B. curtipes Jms. Bothwell, May 8, 1931 (Knowlton).
B. longipes Lw. Logan, September 1937 (K.-Harnston); Provo, May (Hardy).
B. holti McAtee. Cove, May 23, 1938 (K.-Hardy); Henefer (Hansen); Logan (at light), April 28, 1938 (K.-Hardy); Sardine Canyon (Hardy); Slaterville (K.).
B. knowltoni pallidus Hardy. Butlerville, May 7, 1937 (K.); Clearfield; Harrisville, May 5, 1937 (Knowlton); Logan; Roosevelt.
B. melanopilosus Hardy. Dolomite, May 13, 1933 (Knowlton); Kanab, May 3, 1934 (K.); Plain City (K.); Provo; Spanish Fork, May 24, 1938 (Hardy).
B. melanopilosus melanopilosus Hardy. Butlerville, May 7, 1937 (K.); Clearfield, June 6, 1937 (K.). Lehi; Roosevelt, September 19, 1936 (Harnston).
B. mickeli Hardy. Blacksmith Fork Canyon, June 20, 1937 (K.-Smith).
B. monstri Jms. Logan, May 5, 1937 (Harnston).
B. nervosus Lw. Draper, May 7, 1937 (Knowlton); Eden; Logan; Monticello, May 20, 1938 (K.-Harnston); Salina (Knowlton).
B. nigrifemoratus silvus Hardy. Cache Junction, June 27, 1938 (K.-Hardy-Stains); Hyrum, May 1, 1937 (Knowlton-Harnston); Logan; Ogden (Knowlton).
B. pingreensis Jms. Logan Canyon, September 11, 1937 (Knowlton-Harnston).
B. signatus Hardy. Spanish Fork (Hardy).
B. similis Jms. Ft. Duchesne, May 17, 1933 (F.K.Stoffers); Logan, May 29, 1933 (Thatcher); Plain City, May 6, 1935 (Knowlton).
B. tenuipes Coq. Common throughout the state. Occurs in May and June.
B. tristis Will. Provo, May 9, 1937 (Hardy); Wellsville, June 3, 1937 (Harnston).
B. utahensis Hardy. Provo, May 10, 1937 (Killpack).
B. variabilis Lw. Morgan, May 6, 1937 (K); Smithfield, May 18, 1937 (Knowlton); Logan, August 16, 1936 (Harnston).
B. xanthopus Wd. Logan, May 1, 1917 (Pack); Lehi, May 3, 1930 (Knowlton); Richmond, April 29, 1937 (Knowlton). Common throughout Utah.
Philia stigmaterus stigmaterus Say. Manila, August 11, 1937 (K.-Harnston).
P. tibialis Lw. Ephraim, September 22, 1929 (Knowlton); Farmington, 1933 (J.A.Rowe).

Family SCATOPIRIDAE - Minute Black Scavengers

- Aldrovandiella halterata Meig. Hyde Park, August 1938 (Hardy-Stains).
Rhegoclema atrata Say. American Fork, Hooper, Logan, July-August (K.-Smith).
Scatopse notata L. Northern Utah, May to August.

Family STRATIOMYIIDAE - Soldier Flies

- Adoxomyia rustica O.S. Mt. Home, September 17, 1935 (Harnston); Logan Canyon (D. L. Bischoff).
Anoplodonta nigrirostris Lw. Greendale, August 11, 1937 (K.-Harnston); Huntsville; (K.-Hardy); Myton, July 5, 1935 (Harnston); Monarch; Neola. Also Ft. Bridger, Wyoming (K.-Harnston).
Aochletis cinctus O.S. Leeds, September 12, 1938 (K.-Harnston).
Eupachygaster punctifer Mall. Hooper, June 26, 1936 (Hardy); Ogden, Riverdale

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research.

2. The second part of the report is a detailed description of the methodology used in the study.

3. The third part of the report is a detailed description of the results of the study. It discusses the findings of the research and the implications of the results.

4. The fourth part of the report is a detailed description of the conclusions of the study. It discusses the overall findings of the research and the implications of the results.

5. The fifth part of the report is a detailed description of the recommendations of the study. It discusses the suggestions for further research and the implications of the results.

6. The sixth part of the report is a detailed description of the references used in the study. It lists the sources of information used in the research.

(K.-Hardy).

- Euparyphus amplus Coq. Spanish Fork, 1935 (Hardy).
E. crucigerus Coq. Roosevelt, June 29, 1937 (K.-Harnston).
E. linbrocutris Will. American Fork, June 26, 1938 (K.-Hardy); Eden; Laketown; Wolf Creek Pass, September 1, 1937 (K.-Harnston).
E. mutabilis Adams. Corinne June 2, 1937 (Smith); Logan Canyon. Also Preston, Idaho, July 17, 1937 (Smith-Harnston).
Geosargus cuprarius L. Centerville, May 26, 1937 (Knowlton); Huntsville; Randlett, July 4, 1935 (Harnston).
G. viridis Say. Northern and Central Utah.
Microchrysa polita L. Eden, June 4, 1937 (Knowlton); Huntsville (K.-Hardy).
Myxosargus knowltoni Curran. Salt Lake City, June 27, 1937 (K.); St. George, July 5, 1938 (K.-Harnston). Found throughout Utah.
Nemotelus albinarginatus James. Altamah, July 15, 1938 (K.-Harnston); Delta (Stains); Farmington; Garland (K.-Hardy); Slaterville.
N. arator Mel. Goshen, August 11, 1937 (K.-Harnston); Huntsville June 27, 1937 (K.); Layton; Mapleton; Woodside.
N. beameri James. Greendale, August 11, 1937 (K.-Harnston); Springville, June 16, 1937 (Knowlton).
N. bonnarius Johns. Black Rock, August 4, 1938 (K.-Hardy).
N. nigrinus Fall. LaPoint, July 15, 1935 (Harnston); Manti, June (K.).
Odontomyia alticola James. Ft. Duchesne, June 28, 1937 (K.-Harnston); Logan; Smithfield.
O. confusa James. Fielding, August 14, 1937 (Knowlton); Huntsville; Lindon, July 16, 1937 (K.); Vernal.
O. hoodiana Bigot. Hyrum, May, 18, 1937 (K.); Huntsville; Myton, July 5, 1935 (Harnston); Randlett; Trenton.
O. inaequalis Lw. Ft. Duchesne, June 17, 1936 (Harnston); Springville; Tridell; Vernal, June 28, 1937 (K.-Harnston).
O. occidentalis James. Randlett, July 4, 1935 (Harnston).
O. pilimana Lw. Hooper, July 1937 (Hardy); Ogden; Riverdale (K.).
O. pubescens Say. Analsa, June 11, 1937 (K.-Harnston); Huntsville; Hyrum; Logan; Salt Lake, June 10, 1937 (Knowlton).
O. truquii Bell. Greendale, August 11, 1937 (K.-Harnston); Honeyville; Myton, July 15, 1935 (Harnston); Monroe, 1926 (Knowlton-E.G.Titus).
O. tumida Bks. Northern Utah.
O. vertebrata Say. Slaterville, June 12, 1937 (Knowlton).
O. virgo Wd. Hooper, July 1, 1937 (Hardy); Spanish Fork (Knowlton).
Stratiomyia barbata Lw. Benson, May 31, 1938 (K.-Hardy).
S. currani James. Eureka (Spalding); Hyde Park, Huntsville (K.).
S. discaloides Curran. Duchesne, July 15, 1935 (Harnston).
S. discalis Lw. Providence, June 24, 1938 (K.-W.P.Nye).
S. laticeps Lw. Brigham Canyon, June 29, 1937 (K.-Harnston).
S. maculosa Lw. Farmington, May 14, 1937 (K.-Harnston); Logan, Murray, June 9, 1938 (K.-Hardy); Providence; Pleasant Grove.
S. occidentis Bks. Logan Canyon, September 11, 1937 (K.-Harnston); Woodruff July 12, 1938 (Knowlton).
S. quaternaria Lw. Providence, July 7, 1938 (Knowlton).
S. unilimbata Lw. Hyde Park, June 16, 1938 (Hardy-Stains); Hooper; Roosevelt; Trenton.

Family COENOMYIDAE

- Arthroceras leptis O.S. Logan, July 24, 1936 (Harnston); Mill Creek Canyon, June 24, 1938 (K.-D.E.Hardy).
Xylomyia pallipes Lw. Delta, July 5, 1938 (Stains); Hooper and Spanish Fork, July (Hardy); Strawberry Valley, August (Harnston).

Family RHAGIONIDAE - Snipe Flies

Predacious flies, some of which bite man.

- Atherix variegata Walk. Blacksmith Fork Canyon and Ogden, June 1937 (K.-Hardy).
Chrysophilus flavibarbis Adms. Spanish Fork (Hardy).
C. modestus Lw. Spanish Fork (Hardy).
C. tonet osus Bigot. Logan Canyon, October 3, 1937 (Hardy).
Symphoromyia flavipalpis Adms. Hooper, September 18, 1937 (Hardy).
S. hirta John. Huntsville and Provo, June 1937 (Knowlton-Hardy).
S. inquisitor Aldr. Hooper, September 19, 1937 (Hardy).
S. johnsoni Coq. Blacksmith Fork Canyon, June 20, 1937 (Knowlton-Smith).
S. pachyceras Will. Spanish Fork, July 11, 1935 (Hardy).
S. trivittata Bigot. Logan Canyon, July 25, 1937 (Knowlton).
Vermileo opacus Coq. Zion National Park, July.

Family SCENOPINIDAE - Window Flies

- Scenopinus fenestralis L. Logan, Roosevelt, Spanish Fork, (K.-Hardy).

Family MYDAIDAE - Mydas Flies

- Ectyphus townsendie Will. St. George, July 1928 (H.J.Pack).

Family ASILIDAE - Robber Flies

- Anisopogon laetus Lw. Snowville, and Skull Valley, June 1929 (Knowlton).
Asilus avidus V.d.W. Huntsville, July 19, 1938 (K.-Harmston); Keetley, August 11, 1938; Logan Canyon; Mantua.
A. belli Curran, Boulder, July 4, 1938 (K.-Harmston); Woodruff.
A. delicatulus Hine. Vernal, September 3, 1938 (K.-Harmston).
A. erythrocnemus Hine. Mills, August 1, 1938 (K.-Harmston); Woodruff.
A. formosus Hine. Huntsville, July 10, 1938 (K.); Jensen, June 1935 (Harmston).
A. occidentalis Hine. Jensen, June 11, 1933 (Knowlton).
A. paropus Walk, Milford, June 16, 1938 (K.-Harmston); Richmond (Hardy & Stains).
Bombonima fernaldi Back. Logan Canyon, August 15, 1938 (Nye).
Cyrtopogon dasyloides Will. Blacksmith Fork Canyon, June 12, 1938 (Hardy).
C. rufotarsus Back. Long Valley, June 18, 1938 (K.); Mt. Logan (R.E.Nye).
C. stenofrons Wilcox. Logan, September 1, 1936 (Harmston).
C. willistoni Curran. Logan Canyon, July 17, 1938 (Hardy).
Cophura scitula Will. Logan, July 10, 1937 (Knowlton).
Dioctria pleuralis Bks. Mt. Caramel, June 18, 1938 (Knowlton); Mill Creek, La Sal Mountains, July 28, 1938 (K.-Harmston).
Diogmites grossus Br. Holden, August 25, 1935 (W.W.Henderson).
Efferia candida Coq. Delle, July 10, 1929 (Knowlton); Kelton, Promontory; Rattle Snake Pass, and Snowville (Knowlton).
Erax barbatus Fabr. Delta, July 5, 1938 (Stains); Castleton; Indian Creek, July 27, 1938 (K.-Harmston); Paradise; Moab.
E. bicaudatus Hine. Jensen, September; Strawberry Valley (K.-Harmston).
E. dubius Will. Castleton, June 24, 1938; Moab, May 22, 1938; Oasis; Paradise; Smithfield; Trout Creek (Stafford).
E. subpilosus Schin. Blanding; Moab, Green River (K.-Harmston).
E. zonatus Hine. Mercur, July 12, 1937 (L.L.Hansen).
Eucyrtopogon nebulo O.S. Logan Canyon, May-October, 1938 (R.E.Nye).
Heteropogon senilis Bigot. American Fork, June 20, 1926 (H.F.Thornley); Hatton; Logan; Oasis.

- Holopogon phaenotus Loew. Beaver, June (K.-Harmston); Logan; Strawberry.
H. seniculus Loew. Elsinore, July 22, 1937; Ft. Duchesne; Lindon.
Laphystia sexfasciata Say. Corinne, July 13, 1939 (M.F.Bowen).
Laphria sadales Will. Logan Canyon, August 1, 1937 (Harmston).
Lasiopogon monticola Mel. Mt. Logan, June 24, 1938 (K.-R.E.Nye); Moab, July.
Mallophora bronleyi Curran. LaVerkin, August 15, 1936 (Knowlton).
M. purdens Prit. Blanding, August 26, 1938 (K.-Harmston).
M. pulchra Prit. Pine Valley, October 4, 1933 (K.-Harmston).
Neoitamus hardyi Brom. Vernal, June 8, 1938 (K.-Harmston).
Nicocles punctipennis Mel. Moab, September 4, 1937 (K.-Harmston).
Ospreocerus abdominalis Say. Minersville; Oasis, June 1938 (K.-Harmston).
O. ventralis Coq. Castleton, July 29, 1938 (K.-Harmston).
Philonicus limpidipennis Hine. Indian Creek, San Juan County, July 27, 1938 (K.-F.C.Harmston); Moab; Spanish Fork.
Proctacanthus arno Tnsd. Boulder, July 4; Castleton, July 28, 1938 (K.-Harmston).
Promachus nigripes Hine. Mercur, September 1937 (Hansen); Nephi (K.-Harmston).
P. albifacies Will. Escalante and Junction, July 4, 1938 (K.-Harmston).
P. aldrichi Hine. Delle, July 10, 1929 (Knowlton).
Stenopogon helvolus Lw. Colton, August 29, 1938 (K.-Harmston).
S. inquinatus Loew. Boulder, July 4, 1938; (K.-F.C.Harmston); Mantua, July 19, 1937 and Woodruff (Knowlton).
S. martini Brom. Ogden, July 1938 (Hardy); Riverdale, June (K.-Harmston).
S. mexicanus Cole. Castleton, July 29, 1938 (K.-Harmston).
S. neglectus Brom. Woodruff, July 12, 1938 (K.-Harmston).
S. obscuriventris Lw. Farmington, May 12, 1938 (F.H.Gunnel); Fielding, June 17, 1938 (Hardy-Stains); Fountain Green (Knowlton).
S. picticornis Lw. Bluff, August 20, 1938 (K.-Harmston).
S. rufibarbis Brom. Fountain Green; Vernal, June (K.-Harmston).

Family THEREVIDAE - Stiletto Flies

The stiletto flies are, so far as known, predacious both in the adult and larval stages.

- Chromolepida bella Cole. Snowville, June 3, 1934 (W.L.Thomas).
Metaphragma planiceps Lw. Logan, April 29, 1934 (T.O.Thatcher).
Psilocpehala aldrichi Coq. Bear River City, September 3, 1927 (K.); Hooper, Ogden, June (Hardy); Jordan Narrows (K.); Nephi, August (C.J.Sorenson).
P. costalis Lw. Blue Creek, June 17, 1930 (Knowlton); Cedar Creek, Logan Canyon, and Provo, July 1930 (Knowlton).
P. haemorrhoidalis Macq. Roy, June 30, 1927 (Knowlton).
P. lateralis Ad. Roy, June 30, 1927 (Knowlton).
P. montivaga Coq. Roosevelt, June 29, 1937 (Harmston).
P. platancala Lw. Delta, July 27, 1937 (Knowlton); Farmington, Lehi, Plain City, Provo, Spanish Fork, and Wellsville, June-July 1927-1930 (Knowlton).
P. signatipennis Cole. Granger, Hooper, Lindon and Parowan, June (K.).
Thereva cingulata Krob. Logan and Manila, July 1937 (K.-Harmston).
T. duplicis Coq. Roosevelt, June 27, 1937 (K.-Harmston).
T. frontalis Say. Logan Canyon, August (Hardy-Stains); Provo Canyon (Hardy).
T. fucata Loew. Found throughout Utah, July-August.
T. fucatoidea Bromley. Logan Canyon and Manila, August 1937 (K.-Harmston).
T. hirticeps Lw. Snowville, August 30, 1929 (K.-Bowen).
T. nebulosa Krob. Logan, September 14, 1936 (Harmston).
T. pseudoculata Cole. Throughout Utah, June-July.
T. strigipes Lw. Providence Lake, July 26, 1936 (R.E.Nye).
Zionea tannori Hardy. Spanish Fork (Hardy).

Family BOMBYLIIDAE - Bee Flies

Some bee fly larvae are beneficial, preying on grasshoppers.

Anastoechus barbatus O.S. Evans, Iosepa, Lake Point, Logan, Ogden, Promontory and Stockton, September 1930-1934 (Knowlton).

Anthrax catulina Coq. Snowville, May-June 1930 (Knowlton).

A. irroratus Say. Dolomite, Ft. Duchesne, Logan 1934 (K.-Smith-Stoffers).

A. stellans Lw. Logan, Providence, Snowville and Strawberry, June-August (K.-Anthon-Thatcher).

Bombylius major L. Hyrum, Logan and Providence, May 1933-1935 (Smith-Janes).

Conophorus atradula Lw. Salina, June 19, 1935 (Knowlton).

C. fallax Greene. Crescent and Logan Canyon, May 1935 (Knowlton).

C. fenestratus O.S. Franklin, Idaho, May 13, 1934 (C.F.Smith).

Dipalta serpentina O.S. Providence, July 3, 1934 (Gunnell).

Exoprosopa caliptera Say. Ft. Duchesne, July 4, 1935 (Harmston).

E. capucina Fab. Logan and Wellsville, July-August (Gunnell).

E. dodrina Curr. Vernal, August 11, 1935 (C.J. Sorenson).

Lordotus gibbus Lw. Ft. Duchesne, August 20, 1932 (L. Cutler); North Ogden, September 4, 1934 (Knowlton).

L. pulcherrimus Will. Monticello, August 24, 1934 (Knowlton).

Pentabes capito O.S. Logan, Snowville and Trout Creek, May-June (K.).

Phthiria humilis O.S. Trout Creek, May 7, 1934 (J.A.Rowe).

P. notata Lw. Santa Clara, June 26, 1933 (Knowlton).

P. sulphurea Lw. Throughout Utah, August-September.

Poecilanthrax halcyon Say. Ft. Duchesne, August (L.Cutler); Ogden (K.).

P. painteri Maughan. Logan, August 8, 1925 (H. J. Pack).

P. willistoni Coq. Elsinore, September 16, 1935 (K.); Ft. Duchesne, August (Stoffers); Logan, Meadow and Price, August (K.-Harmston).

Systoechus oreas O.S. Logan, June 18, 1932 (B.K. Whitaker).

S. solitus Wlk. Delta, July 8, 1930 (Knowlton).

S. vulgaris Lw. Throughout Utah, July-August.

Villa catalina Coq. Logan and Providence, June 1933 (Knowlton).

V. fenestratoides Coq. Brigham, Logan and Poca, August 1935 (K.).

V. lateralis Say. Promontory, July 30, 1929 (Knowlton).

V. morio eumenes O.S. Logan, August 8, 1935 (Knowlton).

V. simosa jennickeana O.S. Logan, July 16, 1933 (T.O.Thatcher); Trout Creek July 22, 1933 (H.B.Stafford).

Family NEMESTRINIDAE - Tangle-vein Flies

Noorhynchocephalus sackenii Will. Eden, Logan, and Roosevelt, July-August.

Family CYRTIDAE - Small-headed Flies

Acrocera liturata Will. Stansbury Island, July 13, 1913 (Hagan-Titus).

Eulonchus sapphirinus O.S. Ogden Canyon, June 20, 1937 (D.E.Hardy).

Ogcodes rufocapitatus Cole. Granite, July 16, 1936 (Allen); Locomotive Springs, August 1934 (Gunnell-Smith-Thatcher); Logan, Ogden (K.).

Pterodontia flavipes Gray. Ogden Canyon, June 27, 1937 (Hardy).

Family LONGOPTERIDAE - Pointed-wing Flies

Lonchoptera dubia Curran. Farr West, May 7, 1934 (W.L.Thomas); Glendale, Hyrum, Logan, Oakley, Ogden, Provo and Smithfield, April-October, 1933-1938 (K.-Hardy-Harmston).

L. furcata Fallen. Bonson, August 10, 1928 (Knowlton).

- L. lutea Panz. Smithfield, August 24, 1928 (Knowlton).
- L. occidentalis Curr. Kimball, August 5, 1938 (Hardy-Stains).
- L. uniseta Curr. Huntsville, Logan Canyon, June-October (K.-Hardy).

Family PIPUNCULIDAE - Big-headed Flies

- Chalarus spurius Fall. Logan, Sept. 8, 1936; Curreant Creek; Cove; Provo.
- Pipunculus appendipes Cress. Brigham, July 6, 1932 (Knowlton).
- P. bidens Cress. Indian Canyon, June 6, 1933 (K.-Thomas).
- P. confraternus melanis H.-K. Chicken Creek Reservoir, August 17, 1938 (Knowlton-Harmston).
- P. dubius Cress. Bothwell, Aug. 8, 1932 (Knowlton).
- P. femoratus anicorinus H.-K. Wolf Creek Pass, August 15, 1937 (K.-Harmston).
- P. fuscitarsus Adams. Indian Creek, Utah, July 27, 1938 (Knowlton-Harmston); Logan Canyon (Hardy).
- P. harmstoni H.-K. Millville, May 10, 1938 (Knowlton-Harmston).
- P. lasiofemoratus H.-K. Mibley, July 1, 1938 (D.E.Hardy-A.T.Hardy).
- P. loewii Kert. Dolomite, September 14, 1934; Thatcher (Knowlton).
- P. proximus Cress. American Fork, June 25, 1938; Deweyville, Fillmore, Granger, Providence, Manti and Farmington.
- P. proximus flaviantennus H.-K. Smithfield, June 4, 1938 (Hardy-Bischoff).
- P. similis Hough. Arthur; Fillmore; Harrisville; Payson; Providence.
- P. subnitens Cress. Blue Creek, June 25, 1934; Grantsville; Magna; Mills; Syracuse; Timpie.
- P. subvirescens Lw. Blue Creek, July 15, 1936; Granite (Allen); Hyde Park; Mt. Caramol.
- P. toxodentis H.-K. Salt Lake City, August 5, 1937 (Knowlton-Stains); Bluffdale, July 28, 1938 (Knowlton-Harmston).
- P. trochanteratus Malloch. Brigham, August 12, 1938 (Knowlton-Hardy); Magna; Salt Lake City; Fielding.
- P. trochanteratus tonnellus H.-K. This is the most common Pipunculus internal parasite of the beet leafhopper occurring in Utah. Found throughout the state.
- P. unguiculatus Cress. Ellerback, August 14, 1931 (Knowlton); Garfield; Grantsville; Magna; Promontory; Timpie; Wasatch.
- P. utahensis H.-K. Lohi, July 20, 1938 (Knowlton); Johnson (K.-Harmston).
- P. varius phaeothus H.-K. Paradise, June 14, 1938 (Hardy-Stains); Logan Canyon, July 10 to August 7, 1938 (D.E.Hardy-A.T.Hardy).

Family SYRPHIDAE - Flower Flies

- Maggots of a number of the flower flies feed upon aphids and are beneficial.
- Allograpta exotica Wd. Parowan, June 15, 1935 (Knowlton).
- A. obliqua Say. Anslga, July 11, 1937 (Smith-Harmston).
- Arctophilis flagrans O. S. Beaver Creek of Logan Canyon, August 7, 1937 (Smith-Harmston).
- Asemosyrphus mexicanus Mg. Farr West, September 14, 1932 (L. Cutler); Juab; Logan; Midvale; Parley's Canyon; Provo; Richfield.
- Baccha lemur O. S. Cedar City, July; Duchesne; Heber; Iosepa; Lindon; Roosevelt; Also Evanston, Wyoming, August 4, 1932 (Knowlton-M.J. Jones).
- Cartosyrphus brevicauda Shen. Logan Canyon, July 2, 1938 (Hardy).
- C. tristis Lw. Logan Canyon, July; Manila, August 1937 (K.-Harmston).
- Chrysogaster bellula Will. Bellevue; Coal Creek, Iron County; Providence Canyon, June 7, 1933 (K.-Thatcher); Provo, June 1933.
- C. lata Lw. Wolf Creek Pass, August 15, 1937 (Knowlton-Harmston).
- C. pacifica Shen. Logan, June 6, 1937 (K.-Harmston); Ogden (Hardy).
- C. parva Will. Logan, April 10, 1923; Providence; Provo; Payson; Perry.

- Chrysotoxum coloradensis Gr. Logan, July 18, 1936 (Harmston); Randolph (K.-Hardy).
C. integrum Will. Mantua, June 11, 1937 (C.J. Davis).
Cnemodon auriploura Curran. Logan Canyon, June 18, 1937 (K.-Harmston); Morgan; Manila; Woodruff.
C. elongata Curran. Logan, August 7, 1938 (Knowlton-Hardy).
Copestylus marginatum Say. Hurricane; Trout Creek (H.B. Stafford).
Epistrophe 5-limbatus Fab. Escalante, May 27, 1938 (K.-Harmston).
E. guttatus Fall. Logan Canyon, October 15, 1938 (Hardy).
E. brousii Will. Cedar City; Farr West, September (Cutler); Ft. Duchesne, July (Stoffers); Hooper; Providence.
E. latifrons Lw. Benson; Ft. Duchesne, July 1932 (Stoffers); Iosepa; Skull Valley; Trout Creek.
E. temporalis Thorn. Bountiful; Kelton; Logan; Providence; Trout Creek.
E. tenax L. Anderson's Ranch, Washington County; Coal Creek; Cornish; Holladay; Lamo, October 27, 1933. Also Riverdale, Idaho, August 1934 (Smith).
E. nemorum L. Mantua, August 4, 1938 (Knowlton-Allen).
Eumorus tuberculatus Rond. Gusher, September 20, 1938 (Harmston); Logan, July 24, 1935 (Knowlton-Smith).
Eupcodes volucris O.S. Bear River City, August 1926, Ft. Duchesne. A common and very important predator of the pea aphid in Utah.
E. volucris braggii Jones. Roosevelt, June 29, 1937 (K.-F.C. Harmston).
E. urhymia stipatus Wrl. Heber, August (K.-Harmston); Hyde Park (Hardy-Stains).
Ferdinandea croesus O.S. Ogden, June 20, 1937 (Hardy); Logan (Harmston).
Heliophilus (Xylota) curvipes Lw. Logan, July 23, 1937 (Knowlton).
H. nemorum americanum Shan. Wanship, August 1938 (K.-Stains).
H. latifrons Lw. Ogden, July 2, 1932 (Knowlton). Common throughout Utah.
Lathrophthalma aeneus Scop. Riverdale, August 10, 1937 (K.-Harmston).
Lejona lunulatus Mg. Garden City, July 25, 1937 (Knowlton).
L. relictus C.-F. Plain City and American Fork, June 1937 (Hardy).
L. stipatus Wk. Logan, February 21, 1931 (Thatcher); Dry Lake; Mt. Sterling.
Lunoria coolayi Seans. Eden, June 1937 (K.-Hardy); Butlerville; Paradise.
Melanostoma chaetopoda Savid. Ogden, June 23, 1938 (D.E. Hardy).
M. pictipes Big. Honefer; Ogden, August 14, 1937 (Knowlton); Richmond; West Weber. Also Franklin, Idaho, August 1937 (K.-Harmston).
M. coerulescens Will. Wolf Creek Pass, September 1, 1938 (K.-Harmston); Logan; Millville; Ogden.
M. obscurum rostratum Big. Monarch, September 3, 1937 (K.-F.C. Harmston).
M. stagnum Say. Ogden, June (Hardy); Logan; Salt Lake City.
Merodon equestris validus Fab. Ft. Duchesne, July 1935 (Harmston).
Mesogramma marginatum Say. Moab, September, 1937 (K.-Harmston); St. George (K.).
Metosyrphus loquax Zett. Manila, August 11, 1937 (K.-Harmston).
M. latifaciatus Mg. Elberta; Fremont; Salt Lake City, June 6, 1937. (K).
M. lebanensis Fl. Oak Creek Canyon (Jeppson); Roosevelt, June 1937 (Harmston).
M. perplexus Osb. Amalga, May 1938, on peas (Knowlton); Farmington (Gunnell).
M. mendii Jones. Logan, October, 1937 (Harmston); Smithfield; Woodruff.
M. amalopsis O.S. Logan Canyon, July 25, 1937 (Smith-Harmston).
M. flukei Jones. Logan, July 4, 1937 (Nye).
Microdon globosus Fabr. Heber, June 3, 1935 (Harmston).
Neoscia metallica Will. Hooper, July 16, 1937 (Hardy); Providence; Wellsville; Wolf Creek Pass.
Paragus bicolor Fab. Hurricane, August 15, 1936 (K.); Eden, July 1937 (K.).
 Taken from several localities throughout the state.
P. tibialis Fall. Salina, September 1937 (K.-F.C. Harmston). Very common throughout the state. Salt Lake City, August 21, 1931 (Knowlton-M.J. James).
Parhelophilus lactus Lw. Ft. Duchesne, June 28, 1937 (K.-Harmston); Hooper, August (Hardy); Salina (C.J. Sorenson).
Pipizella occidentalis Town. Lamo, August 22, 1929 (M.F. Bowen).

- P. rufithoracica Curr. Huntsville, August (K.-Hardy); Provo (K.-Harmston).
Platycheirus angustatus Zett. Emery and Loa, September 8, 1938 (K.-Harmston); Circleville; Goshen; Huntsville.
P. erraticus Curran Manila, August (K.-Harmston); Logan Canyon; Laketown.
P. immarginatus Zett. Kaysville, June 16, 1937 (Hardy); Cache Junction, April.
P. occidentalis Curran. Ft. Duchesne, August 14, 1937 (K.-Harmston).
P. quadratus Say. Garfield, April 17, 1934 (K.-Thomas); Logan, June 11, 1931 (Thomas); Granddole; Garland.
P. scambus Staeg. Honeyville, June 8, 1938 (K.-Hardy); Ogden; Provo; Wanship, August 5, 1938 (K.-Stains).
Polydontomyia curvipes Wd. Manila, August 1937 (K.-Harmston); Parley's Canyon.
Pyrophaenia granditarsus Forst. Coalville and Woodruff.
Scaeva pyrastris L. Amalga, July 11, 1937 (Smith-Harmston); Avon, June 1938 (K.-Hardy); Hyde Park; Moab; Mapleton. Important predator of the pea aphid.
Sphaerophoria cylindrica Say. Amalga, June 11, 1937 (Smith-Harmston); Farmington, July 23, 1930 (K.-Janes); northern Utah.
S. robusta Curran. Collected during June-July, 1937 Brigham, Eden, Gunnison, Jensen, Hooper, Murray (K.-Harmston). Also Preston, Idaho.
S. sulphuripes Thom. Castle Rock, September 1, 1937 (K.-Harmston); Escalante, May (K.-Harmston); Jensen; Henefer; Morgan; Springville.
S. scripta Lw. Iosepa, August 27, 1929 (K.-M.F. Bowen).
Spilomyia interrupta Will. Logan Canyon, September 4, 1937 (K.-Harmston); Paradise (K.-Hardy); Mt. Pleasant, September 15, 1929 (Pack).
Syrphus opinator O.S. Bountiful, April 1930; Clearfield, August; Garland; Logan (Janes); Newton; Timpie. Also Strawberry Creek, Idaho, (K.-Smith).
S. ribesii L. Bear River City, August 12, 1938 (K.-Stains).
Syritta pipiens L. Garland August 8, 1931 (K.-Janes); Farmington, June 1934. (Smith). Common in northern Utah.
Toxomerus occidentalis Curran. Logan, May 8, 1938 (D.E. Hardy).
Tropidea quadrata Say. Hyde Park, June 11, 1938 (Hardy-Stains); Providence, July 7, 1938 (D.E. Hardy-A.T. Hardy).
Volucella bombylans rufomaculata Jones. Logan Canyon, September 1937 (Harmston).
 Of the Syrphidae, Scaeva pyrastris seemed to be the most important pea aphid predator during 1937 and 1938, followed in abundance by Eupoecodes volucris, (These two species, in the order named, were the only adult syrphids actually reared from larvae taken on peas or alfalfa). The following species were next in abundance collected in pea aphid infested pea fields: Mesogramma marginata Say, Allograpta obliqua Say, Syrphus opinator O.S., Syritta pipiens M., Sphaerophoria cylindrica Say, Paragus tibialis Fall, P. bicolor F. A few Eristalis tenax L. were seen in the fields late in the season. Many of the syrphid larvae brought in for rearing were found to be parasitized, and several species of hymenopterus parasites were reared from them.

Family ORTALIDAE (OTITIDAE) - Pictured-wing Flies

- Anacamptis (Ceratoxys) latiuscula Lw. Common throughout Utah.
Chaetopsis massyla Walk. Ft. Duchesne, July 21, 1936 (Knowlton); Huntsville, June 12, 1937 (Knowlton); Slaterville; Spanish Fork (Hardy).
Callopistromyia annulipes Max. Hooper, July 17, 1937 (Hardy); Logan, April 10, 1936 (Knowlton); Ogden Canyon, August 19, 1937 (Hardy); Oakley.
Chrysomya demandata F. Hooper, June 15, 1937 (Hardy); Provo, June 31, 1937 (Knowlton); Payson; Roosevelt, September 2, 1937 (K.-Harmston).
Ceratoxys pyrrhocera Lw. Logan, June 18, 1931 (Thomas); Plain City, June 21, 1937 (K.). Riverton; St. George, May 22, 1919; Salt Lake City.
Euxesta obesa Curran. Benson, July 14, 1937 (C.J. Davis); Hooper, June 1937 (Hardy), Slaterville, June 12, 1937 (Knowlton).

- E. apicalis Will. Tooele, June 20, 1937 (L.L. Hansen).
E. bicolor Cresson. Eden, July 10, 1937 (Knowlton); Hot Springs, June (K.-Harmston);
Tremonton, June 11, 1938 (Hardy-Stains).
E. contorta Curr. Delta, July 5, 1938 (Stains); Kelton, June (K.-Janes).
E. knowltoni Curr. Delta, July 5, 1938 (Stains); Hyde Park, June 6, 1938 (Hardy-
Stains).
E. nitidiventris Lw. Bluffdale, August 10, 1938 (K.-Harmston); Brigham Canyon;
Farmington; Hooper; Murray; Ogden Canyon, July 18, 1937 (Hardy).
E. nigriceps Curr. Cornish, June 12, 1929 and Delle, May 1930 (Knowlton).
E. pulchella Curr. Hyde Park, June 13, 1938 (Hardy-Stains).
E. scutellaris Curr. Brigham, June 10, 1938 (K.-Hardy-Stains); Utah Hot Springs,
June 21, 1938 (Knowlton-Harmston).
E. spoliata Lw. Tremonton, June 17, 1938 (Hardy-Stains).
E. xeres Curr. Corinne, June 14, 1937 (Knowlton); Eden; Granger, June 13, 1938
(K.); Hooper; Ogden, June 17, 1937 (Hardy).
Meliera canus Lw. Duchesne, September 2, 1937 (K.-Harmston); Kingston, June 19,
1935 (Sorenson); Mendon; Syracuse, June 3, 1937 (Knowlton).
M. occidentalis Coq. Ft. Duchesne, August 14, 1937 (K.-Harmston); Hooper; Kan-
sville, June 16, 1937 (K.); Salem, July 1934 (K.-Smith); Slaterville.
Oedopa capita Lw. Hooper, June 12, 1937 (K.); Kaysville, Riverdale (K.).
Pseudotephritis vau Say. Hooper, July 3, 1937 (Hardy).
Rivellia severini Blt. College Ward, May 14, 1937 (Knowlton); Hooper, July 25, 1937
(Hardy); Logan Canyon, October 19, 1937 (Knowlton).
Scioptera vibrans Lw. Bensen; Corinne, June 22, 1937 (K.); Logan, (at light) June
28, 1937 (Knowlton-Smith); Springville, July 11, 1937 (E.W.Anthon).
Tetanops aldrichi Hend. Hooper, July 7, 1937 (Hardy); Logan, June 12, 1937 (Harm-
ston); Sunset, May 14, 1937 (K.). The sugar-beet root maggot has several times
been a serious pest of sugar-beets at Amalg, Trenton, Lewiston, Cornish and
Hooper (Knowlton).

Family TRYPETIDAE - Fruit Flies

- Acurina (Tephrella) trixa Curran. Brigham, Willard, June 3, 1937 (K.-Smith);
Duchesne, May 26, 1933 (Knowlton); Logan.
Camaromyia tapetis Coq. Emery, September 6, 1937 (K.-Harmston); Ft. Duchesne;
Gunnison; Joseph, July 22, 1937 (K.-Dorst); Hooper (K.).
Eutreta diana O.S. Farmington, June 1935 (Anthon); Hyde Park (Hardy-Stains).
E. jonesi Curran. Lindon, July 16, 1937 (Knowlton).
E. pacifica Curran. Jensen, September 3, 1937 (K.-Harmston); Logan Canyon, August
11, 1938 (Hardy-Stains).
Euaressta (Setigeresta) (Tephritis) aequalis Lw. Avon, August 28, 1937 (K.-Harmston);
Lewiston, Mendon, July 29, 1937 (K.-Harmston); Nephi; Ogden; Plain City;
Riverheights; (K.); Riverdale, July 7, 1937 (Hardy).
Oedicarena diffusa Snow. Hooper, July 28, 1937 (Hardy).
Proccidochares anthracina Doane. Ft. Duchesne, June 28, 1937 (K.-Harmston); Sandy,
June 15, 1937 (Knowlton).
Paracantha culturis Coq. Hooper, July 12, 1937 (Hardy); Salina Canyon, September
6, 1937 (Knowlton-Harmston).
Straussia longipennis Lw. The sunflower maggot, Hooper, June 29, 1937 (Hardy).
Tephrella lutca Coq. Vernal, June 28, 1937 (Knowlton-Harmston).
Terellia occidentalis Snow. Logan Canyon, August 1, 1937 (Knowlton-Davis); Smith-
field, July 7, 1937 (Smith-Harmston).
Trypanea acutangula Thom. Trout Creek, May 6, 1934 (Rowe).
T. bisetosa Coq. Bluffdale, August 11, 1938 (Knowlton); Huntsville, June 12, 1937
(K.); Kanara; Logan; Payson, August 18, 1937 (Knowlton).
T. hobbes Curran. Hardup, June 24, 1932 (Knowlton-M.J.Janes).

- T. jonesi Curran. Hooper; Logan Canyon, October 19, 1937 (Hardy); Murray, October 5, 1938 (Knowlton).
T. microstigma Curran. Liberty, August 10, 1938 (K.-Harmston); Mills, August 17, 1938 (K.-Harmston); Newton, August 11, 1937 (Knowlton-W.P. Nye).
T. nigricornis Coq. Benson; Indian Creek; August (K.-Harmston); Logan, July 1938 (Hardy-Stains); Newton; Riverdale; July 1938 (K.-Hardy); Uinta (K.).
T. radifera Coq. Farmington, May 21, 1937 (Knowlton); Logan Canyon, May 16, 1934 (Thatcher); Orem; Tooele, August 27, 1937 (Hansen).
T. wheeleri Curran. Hooper, July (Hardy); Millville, September (K.-Stains).

Family LONCHAEIDAE

- Lonchaea laticornis Mg. Corinne, June 24, 1937 (Knowlton).
L. polita Say. Bear River City, September 9, 1925 (Knowlton).

Family CALOBATIDAE - Stilt-legged Flies

- Calobata mima Hennig. Throughout northern Utah, June-August (Knowlton-Harmston).

Family MICROPEZIDAE

- Micropeza lineata V.D. Throughout Utah, June-August.
M. setiventris Cross. Throughout Utah, June-August.

Family PHORIDAE

- Megasilia borealis Mall. Snowville, September 13, 1930 (Knowlton).
M. iriquoiana Mall. Hooper, September 3, 1937 (Hardy). Reared from larvae of Heliothis obsoleta F., the tomato fruitworm.

Family PLATYPEZIDAE - Flat-footed Flies

- Agathomyia pulchella John. Logan Canyon, July 10, 1938 (Hardy-Stains).
Platypeza unicolor Snow. Logan Canyon, August 7, 1938 (Hardy).

Family LAUXANIIDAE

- Camptoprosopella vulgaris Fitch. Delta, Ft. Duchesne, Greendale, Gunnison, Hooper, Jensen, Lewiston and Naples, June-September 1927-1937 (K.-Hardy, Stoffers, H.).
Homoneura nudifemur Mall. Grafton and Zion National Park, June (Knowlton).
H. occidentalis Mall. Blanding and Zion National Park, June 1933 (Knowlton).
Lauxania nigrinervis Coq. Logan, July 1937 (Smith-Harmston).
Minettia flavicola Coq. Farmington, Kanosh and Logan, June-August (K.-Harmston).
M. longicornis Fall. Ogden and Spring Canyon, August 1937 (Knowlton).
M. lupulina Fabr. Huntsville, Logan Canyon, Manila and Ogden, June-September, 1936-1937 (Knowlton).

Family CHLOROPIDAE -Frit Flies.

- Chloropisca glabra Meig. Abundant and widely distributed in Utah; its larvae have been reported as feeding upon sugar-beet root aphids.
C. pulla Ad. Huntsville and Ogden, June-August (Knowlton).
C. pullipes Coq. Logan, October 9, 1937 (D.E.Hardy).
C. variceps Lw. Roosevelt, July 4, 1935 (Harmston).
Chlorops certina Ad. Spanish Fork (D.E.Hardy).
Crassiseta costata Lw. Hooper, Kaneshville, Ogden, Payson and Provo, June-August (Knowlton-Hardy).
C. eunota Lw. Hooper, July 7, 1937 (Hardy).

[illegible]

- Dicraeus incongruus Aldr. Cache Junction, June 20, 1913 (Hagen).
Epichlorops exilis Coq. Blacksmith Fork Canyon, Eden, Providence and Provo, June-August (Knowlton-Hardy).
Hippelates pusio Lw. Cache Junction, Delta, Salt Lake City, July (K.).
Madiza cinerea Lw. Promontory, June 18, 1929 (Knowlton-Bowen).
M. glabra Fall. Delta, Lewistown, Spring Canyon, July-August (K.).
M. pygmaea Beck. Trenton, August 10, 1927 (Knowlton).
Meronyza americana Fitch. Wheat stem maggot has been collected throughout northern Utah, June-August (Knowlton-Harnston-Hardy).
M. marginata Beck. Fish Lake, June and St. John, September (K.).
M. saltatrix var. nigiventris Mg. Providence, September 11, 1933 (K.).
Mosillus tibialis Cress. Etna, Lohi, Morgan and Portage, July-September, 1926-1935 (Knowlton).
Oscinella coxendix Fitch. Throughout Utah, April-August (K.).
O. coxendix var. pullicornis Fabr. Hooper, Ogden and Provo Canyon, June 1937 (D.E. Hardy).
O. frit L. Throughout Utah, June-July, (K.-Hardy-Harnston).
O. minor Ad. Santa Clara, April 26, 1935 (Knowlton).
Siphonella parva Ad. Hooper and Ogden, July 30, 1937 (Hardy).
S. punctifrons Beck. Lakeview, June 5, 1933 (Knowlton-Smith)

Family EPHYDRIDAE - Shore Flies

- Hydrellia griseola Fall. Blue Creek, April 21, 1930 (K.).
H. scapularis Lw. Providence, August 27, 1925 (K.-James).
Mosillus tibialis Cress. Etna, 1929; Lohi; Morgan; Portage (K.).
Notiphila scalaris Lw. American Fork, June 23, 1926 (Knowlton).
Ochthera mantis De G. Brigham, Sept. 12, 1925 (Knowlton).
Parydra aurata Jones. Fielding, September 2, 1925 (Knowlton).
P. bituberculata Lw. Fielding, September 2, 1925 (Knowlton).
Philygria fuscicornis Lw. Snowville, September 26, 1930 (K.).
Psilopa leucostoma Mg. Riverside, September 14, 1925 (Knowlton).

Family BORBORIDAE

- Borborus equinus Fall. Bear River City, September 9, 1925 (K.).
Leptocera fontinalis Fall. On beets at Bear River City, August 10, 1927; Logan, April 15, 1929 (Knowlton).
L. limosa Fall. On beets at Riverdale, September; Salt Lake City (K.).

Family CEAMAEMYIIDAE

- Chamenyia polystigma Meig. Logan, May 31, 1935 (T.O. Thatcher).
Leucopsis americana Mall. Cornish, June 5, 1929 (Knowlton).
Ochthiphila juncorum Fall. Salt Lake City, May 5, 1923 (Knowlton).

Family TETANOCERIDAE - Marsh Flies

- Atrichomelina pubera Lw. Dry Lake, July 29, 1938 (K.-Harnston).
Dictya expansa Steyskal. Moab, September 4, 1937 (K.-Harnston).
D. incisia Curran. Leeds, April 25, 1935 (K.-Smith).
D. unbrarum L. Logan, May 1, 1923 (K.); Ogden; Providence.
D. unbriodes Curr. Duchesne and Farmington, August 1938 (K.-Harnston); Glendale, July 11, 1934 (K.); Hooper, Logan, August 1937 (Hardy).
Hedroneura connexa Mall. Wasatch, September 1, 1937 (K.-Harnston).

- H. rufa Panz. Corinne, June 7, 1937 (Knowlton); Farr West, Greendale, Hooper, Logan and Syracuse, June-September (K.-Harmston).
- Limnia saratogensis Fitch. Logan, August (Titus); Providence (K.).
- Melina fuscipes Mcq. Preston, Idaho, July 2, 1937 (Knowlton).
- M. grisescens Mg. Corinne, Hooper, Logan, Woods Cross, July-October (K.).
- M. nana Fall. Draper, Nephi, Ogden, Providence, Richmond and Woods Cross, June-September, 1937 (Knowlton).
- M. obtusa Fall. Joseph, Kaneshville, Slaterville and West Jordan, June-September, 1937 (Knowlton).
- Sciomyza simplex Fall. Logan, June 25, 1935 (Knowlton).
- Spodon armipes Lw. Logan, Marysville, Morgan, Plain City and Providence, July-September, 1937-1938 (Knowlton-Harmston).
- S. pacifica Cr. Common throughout Utah, June-October.
- S. pusillus Lw. Amalga, Logan Canyon, Marysville and Sigurd, June-August 1935-1938 (Knowlton).
- Tetanocora nanciae Edon, July 10, 1937 (K.); Iron Springs, Logan (K.); Plain City, June (Hardy); Wellington (K.-Harmston).
- T. parvipygma Mall. Greendale and Manila, August 1937 (K.-Harmston).
- T. plobesia Lw. Vernal, August 11, 1937 (K.-Harmston).
- T. robusta Lw. Hooper, Logan, Ogden, Plain City, July (K.-Hardy).
- T. triangularis Lw. Juab, July 8, 1934 (Knowlton).
- T. valida Lw. Logan, October 10, 1937 (Hardy).
- T. vicina Mcq. Logan Meadows, August 20, 1933 (Knowlton).
- Trypetoptera canadensis Mcq. Brigham Canyon, Logan, July 1929 (K.).

Family PSILIDAE

- Psila bicolor Mg. Edon, June 4, 1937 (Knowlton-Smith).
- P. microcera Mel. Logan and Strawberry Valley, June-July (Knowlton).
- P. rosae Fabr. Logan, October 10, 1937 (Hardy).

Family HELOMYZIDAE

- Helomyza serrata Lw. Logan, April 15, 1932 (F.K. Stoffers).
- Pseudoleria pectinata Lw. Grantsville, May 3, 1929 (K.).
- P. robusta Gar. Collinston and Snowville, May-June, 1937 (K.).
- P. vulgaris Gar. Grantsville, Hooper, Logan, Park Valley and Trout Creek, March-August, 1936 (K.-Hardy, Thatcher).

Family SARCOPHAGIDAE - Flesh Flies

- Sarcophaga aculeata Ald. Monroe; Ogden, July 22, 1937 (K.); Woodruff, August 10, 1937 (Knowlton-Harmston).
- S. atlanis Ald. Kaneshville, June 11, 1937 (D.E. Hardy).
- S. barbata Thom. Gusher, September 20, 1936 (F.C. Harmston).
- S. bullata Pk. Hooper, August 7, 1937 (D.E. Hardy); Ogden (K.); Mendon, July 29, 1937 (K.-Harmston); Utah, September 1937 (K.-Harmston).
- S. coloradensis Ald. Green River, September 1937 (K.-Harmston); Gusher (Harmston); Manila, August 11, 1937 (K.-Harmston); Riverdale (K.).
- S. cooleyi Pk. Dry Lake and Greendale, August 11, 1937 (Knowlton-Harmston); Ogden, July 19, 1937 (D.E. Hardy).
- S. haemorrhoidalis Fall. Hooper, August 3, 1937 (Hardy).
- S. hunteri Hgh. Logan, August 1937 (Knowlton); Provo (Harmston).
- S. lookoi Hall. Ogden, June 20, 1937 (D.E. Hardy).
- S. laticetosa Park. Farmington and Hooper, July 1937 (Hardy).
- S. l'herminieri Dv. Collected from various areas of Utah during 1937.

The first part of the paper discusses the importance of the study of the history of the United States. It is a study of the past which helps us to understand the present and to prepare for the future. The study of history is not only a study of the past, but also a study of the present. It is a study of the people who have lived in the United States, and of the events which have shaped the country. It is a study of the values and beliefs which have guided the people, and of the problems which they have faced. The study of history is a study of the human condition, and of the role of the individual in society. It is a study of the past which helps us to understand the present and to prepare for the future.

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- S. opifera Coq. Hooper, June 30, 1937 (Hardy).
S. pachyprocta Pk. Hooper, July, 1937 (Hardy).
S. peniculata Pk. Ogden, June 1937 (Hardy).
S. planifrons Ald. Monarch, August 1935 (Harmston); Murray, July 15, 1937 (Knowlton); Paradise, August 5, 1937 (Knowlton).
S. plinthopyga Wd. Elberta, August 11, 1937 (Knowlton).
S. prohibita Ald. Hooper and Ogden, July, 1937 (Hardy).
S. quadrisetosa Coq. Hooper, June 1937 (Hardy).
S. rapax Wlk. Goshen, Hooper, Mendon, Midvale, Oak City, and Salem, July and August 1937 (D.E. Hardy, Harmston-Knowlton, C.J. Sorenson).
S. setulosa v.d.W. Manila, August 1937 (Knowlton-Harmston).
S. sinuata Meig. Beaver Dam, Greenville, Murray, Slaterville and Vernal, July-August, 1937 (Knowlton-Harmston, Hardy).
S. uncata v.d.W. Logan, August 1937 (Knowlton).
Wohlfahrtia neigemi Sch. Hooper, July 1937 (Hardy); Ioka, July 1934 (Harmston); Payson (Knowlton); Woodruff, August 10, 1937 (Knowlton).

Family TACHINIDAE - Tachinid Flies

- Acemyia tibialis Coq. Current Creek, September 16, 1936 (Harmston); Logan Canyon, May 31, 1934 (Thatcher).
Achaetoneura archippii Vora Will. Elberta, Ft. Duchesne, Mona, Roy and Syracuse, June-August 1937 (Knowlton-Harmston).
Admontia dogeerioides Coq. Laketown, July 25, 1938 (Hardy).
A. pergandea Coq. Green River and Holladay, August 1937 (K.-Harmston).
Anachaetopsis tortricis Coq. Bluebell, September 19, 1935 (Harmston).
Aphria ocypterata Mg. Brigham Canyon, September 1938 (Knowlton-W.P.Nye).
Archytas lateralis Mgt. Logan Canyon, June 13, 1937 (Knowlton-Harmston).
A. metallica Desv. Brigham Canyon, June 24, 1937 (Knowlton-Harmston); San Rafael Swell, September 11, 1937 (W.P.Nye).
A. sterrina Desv. Woodruff, August 25, 1938 (Knowlton-Hardy).
Blepharigena spinosula Bigt. Logan Canyon, July 25, 1937 (K.); Ogden (Hardy).
Bonnetia compta Fall. Throughout Utah, June-September (K.-Hardy-Harmston).
Celatoria diabroticae Shm. Leeds, August 15, 1936 (Knowlton).
Ceracia dentata Coq. Hooper, June 25, 1937 (Hardy).
Chaetogaedia monticola Bigt. LaSal, September 5, 1937 (Knowlton-Harmston).
Chaetopholepsis tarsalis Twms. Vernon, May 1, 1938 (W.A. Frahn).
Citogaster immaculata Mcq. American Fork, Logan, Sardine Canyon and West Weber, June-August (Knowlton-Harmston).
Clitomorpha triangulifera Lw. Roosevelt, August 13, 1937 (K.-Harmston).
Cnephalia hebes pansa Snow. Skull Valley, August 31, 1938 (Knowlton).
Cuphocera hirsuta Tns. Mantua, August 4, 1937 (Knowlton-Harmston).
Cylindromyia armata Aldr. American Fork, Gusher, LaPoint and Petersboro, June-August (K.-Harmston); Skull Valley, August 31, 1938 (K.-Hanson).
C. dasiodes Wlk. Plain City and Wellsville, July 1937 (Knowlton-Hardy).
C. intermedia Mg. Logan, Myton, Wellington, July-September (K.-Harmston).
C. vulgaris Aldr. Altonah and Brigham, September 1938 (Knowlton-Harmston).
Dejeanus vexatrix O.S. LaSal, July, Newcastle, September (K.-Harmston).
Dinera cinera Tns. Greendale, Roosevelt, Vernal, August-September (K.-H.).
Distichona varia v.d.W. Ogden, July 5, 1937 (Hardy).
Doryphorophaga doryphorae Riley. Manila and Randolph, August 1937 (K.-Harmston).
Epalpus signiferus Wlk. Hooper, Jensen, Myton, Salt Lake City and Tridell, June-August 1935-1937 (Knowlton-Harmston).
Ernestia ampelus Wlk. Logan Canyon, August 4, 1937 (Smith-Harmston).
Euclytia flava Tns. Logan Canyon, September 2, 1938 (Hardy).
Exorista larvarum L. Leeton and Ogden, July-September 1938 (K.-Harmston).
E. simulans Mg. Ft. Duchesne, Greendale and Sandy, June-August (K.-Harmston).

- Exoristoides johnsoni Coq. Logan, Paradise, June 1935-1938 (K.-Hardy-Stains).
- Fabriciella brevirostris Toth. Hooper, August 1937 (Hardy); Moab, Sandy (K.-H.).
- F. florum Wlk. Greendale, Logan, Manila, Randolph, August 1937 (K.-Harmston).
- F. hispida Toth. Bluebell, September 6, 1935 (Knowlton-Harmston).
- F. latifacies Toth. Fountain Green, Monarch and Newcastle, September (K.-H.).
- F. latigena Toth. Cove Fort, Newcastle and Randolph, August (K.-Harmston).
- F. lutzi Curr. Escalante, Manila and Roosevelt, August-September (K.-Harmston).
- F. nigella Rein. Woodruff, August 25, 1938 (Knowlton-Hardy).
- F. nitida v.d.W. Ioka, Laketown, Roosevelt and Yost, July-September (K.-Harmston).
- F. piceifrons Tns. Ashton, Idaho, August 2, 1933 (R.J.Costley).
- F. rostrata Toth. Beaver, Newcastle, Sandy and Woodruff, August (K.-Harmston).
- Gonia fissiforceps Toth. Laketown, September 21, 1938 (Knowlton-Harmston).
- G. frontosa Say. Altonah, Logan and Provo, April-September 1935-1937 (K.-H.); Skull Valley, June 25, 1938 (L.L.Hansen).
- G. longiforceps Toth. Logan, April 4, 1936 (W.A.Frahm); Millville, May (K.-H.).
- G. sequax Will. Altonah, Gusher, Hayden, Uinta Canyon, July-September (K.-H.).
- G. turgida Coq. Logan, September 8, 1936 (W.A.Frahm).
- Gymnophania montana Coq. Hooper, Kaneshville, Riverside, June (Hardy-Stains).
- Hemithrixon oestriforme B. Logan and Valencia, July 20, 1938 (Knowlton-Harmston).
- Hyalomia aldrichii Tns. Common throughout Utah, June-August.
- Hystieria abrupta Wh. Logan Canyon, July 20, 1936 (R.E.Nye).
- Juriniopsis edusta v.d.W. Blanding, Enterprise, Lund, Monticello and Newcastle, August-October 1938 (Knowlton-Harmston).
- Leucostoma aterrina Will. Paradise, August 5, 1937 (Knowlton).
- L. atra Tns. Emery, Greendale, Green River and Moab, July-September 1937-1938 (Knowlton-Harmston); Paradise, June 14, 1938 (Hardy-Stains).
- Lydella myoides Desv. Huntsville, Randolph, Salem, Strawberry and Vernal, June-August 1937-1938 (K.-Harmston, K.-Stains).
- Lydia areas Wlk. Cove, June 11, 1938 (knowlton-W.P.Nye).
- Madremyia saundersii Will. Greendale, August 11, 1937 (Knowlton-Harmston).
- Melanophrys flavipennis Will. Myton, Petersboro and Trenton, June (K.-Harmston).
- Metopomuscopteryx tibialis Coq. Salt Lake City, May 6, 1937 (Knowlton).
- Microphthalma disjuncta Wd. Kimball, August 5, 1938 (K.-Stains); Moab, Roosevelt, and Vernal, June-September 1937 (Knowlton-Harmston).
- Myiophasia metallica Tns. Logan Canyon, Manila, August 1937 (K.-Harmston).
- M. robusta Coq. Portage, August 12, 1938 (Knowlton-D.E.Hardy).
- M. setigera oregonensis Tns. Delta, Hooper, Howell, Portage and Salt Lake City, June-September 1937-1938 (Knowlton, Stains, Hardy, Harmston).
- Nemorilla floralis Fall. Joseph, July 22, 1937 (K.-Dorst); Lindon, Pleasant Grove, June 1937 (K.-Hansen); Moab, Woodside, September 4, 1937 (K.-H.).
- N. maculosa Mg. Providence, July 10, 1937 (Knowlton-Harmston).
- Oestropasia clausa B. Brigham Canyon, June 12, 1937 (Knowlton).
- Pachyophthalmus floridensis Tns. Penrose, April 20, 1933 (W.L.Thomas).
- Parachytas decisa Wlk. Blacksmith Fork, September 3, 1938 (Knowlton-Stains).
- Paradojonia rutilioides Jaen. Hurricane, La Sal, Monticello, Rockville and Zion National Park, September-October (Knowlton-Harmston).
- Paradidyma affinis Rein. Ogden, June 26, 1937 (D.E.Hardy).
- P. apicalis Rein. Midvale, Salem, Syracuse, July 1937 (Knowlton-Harmston).
- P. singularis Tns. Ft. Duchesne, La Sal, Monarch, June-September 1937 (K.-H.).
- Polotonia anxia Wlk. Wellsville, August 10, 1938 (Knowlton-Harmston).
- P. bryanti Curr. Blanding, Cove Fort, Jericho, Kanosh, La Sal, Woodruff, August-September (K.-Harmston); Tropic, August 29, 1937 (K.-L.L.Hansen).
- P. campestre Curr. Bluff, Boulder, Enterprise, Ioka, Lewiston and Logan, August-October 1936-1938 (Knowlton-Harmston).
- P. convexa Curr. Fillmore, Greendale, Jensen and Kanosh, August 1938 (K.-Harmston); Skull Valley of Tropic County, August 31, 1938 (Knowlton-Harmston).
- P. iterans Wlk. Gusher, Randolph, Richmond and Woodruff, July-August 1937-1938.

- Phorocera claripennis Mt. Elberta, Genola, Lohi, Ogden and Sardine Canyon, April-August 1937 (Knowlton-Harnston).
- Plagioprosphrysa parvipalpis v.d.W. Ogden, Sterling and Syracuse, July-September 1938 (Knowlton-Harnston).
- Pseudotachinomyia slossonae Tns. Sardine Canyon, June 3, 1937 (K.-Harnston).
- Siphosturniopsis phycioidis Coq. Hooper and Plain City, June 1937 (Hardy).
- Spathidoxia dunningii Coq. Hooper and Wellsville, June 1938 (K.-Hardy).
- Spathidoxia rasilis Rein. Bear River City, July 10, 1935 (Knowlton-C.F.Smith); Logan and Trenton, July-August (Knowlton-Hardy).
- Spilochotosema californica Smith. Wahwah, September 17, 1938 (K.-Harnston).
- Sturnia incompta v.d.W. Gusher, Logan, Provo and Salen, May-September (Knowlton-Harnston).
- Tachinophyte vanderwalpi Tns. American Fork, Emery, Ft. Duchesne, Greendale, Logan and Paxon, August 1937 (Knowlton-Harnston).
- Tachinomyia variata Curr. Butlerville and Eden, July 1937 (Knowlton).
- Taxigramma heteronoura Mg. Magna, May 9, 1935 (Knowlton).
- Theliara nigripes F. Blacksmith Fork, June 23, 1938 (Hardy); Logan and Roosevelt, June 1936 (Knowlton-Harnston).
- Trichoclytia atrata Coq. Benson, May (Hardy); Delta, September 1938 (Stains).
- Voria ruralis Mg. Draper and Manila, May-August 1937 (Knowlton-Harnston).
- Wagneria carbonaria Panz. Cedar City, Draper, May-August 1936-1937 (Knowlton).
- W. cinerose Coq. Castle Cliff, Hatton, Marysville, St. George, April-June 1935 (K.).
- W. vernalis West. Hooper, June 26, 1937 (D.E.Hardy).
- Winthemia deilephilae O. S. Plain City, July 18, 1937 (Hardy).
- W. quadrupustulata Fab. Riverdale, July 10, 1937 (Knowlton).
- W. rufopicta Bigt. Clinton and Garland, June 1938 (Knowlton-Harnston).
- Xanthomelana gracilentata v.d.W. Ioka, July 1938 (Knowlton-Harnston).
- Zenillia caesar Aldr. Lindon and Logan, July 1937 (Knowlton-Hansen).

Family OESTRIDAE - The Bot Flies

- Hypoderma lineata Dev. The ox bot is rather common in Utah, causing considerable annoyance and injury to range and dairy cattle.
- Oestrus ovis L. Sheepmen from various sections of Utah have, on several occasions during recent years, reported infestations and death of sheep due to maggots of this fly, the sheep bot.

Family MUSCIDAE - Muscids

- Calythea micropteryx Thoms. Cedar City, June 1935; Logan and St. George, May (Knowlton); Summit, July 1932 (K.-M.J.Janos).
- Coenosia cilicauda M. Lohi, July 1930; Logan, August 1936 and Taylorsville, August 1931 (Knowlton).
- C. fraterna M. Eden, July 1937 (K.); Farmington, 3 September 1933 (J.A.Rowe); Woods Cross, September 1934 (Knowlton).
- C. humilis Moig. Logan, June (T.O.Thatcher); Taylorsville (Knowlton).
- Cryptolucilia caesarion Mg. Benson, July 1909 (Titus-Hoff).
- Eremomyia humeralis St. Logan Canyon, August 1936 (C.J.Davis).
- Fannia canicularis L. Logan, May 1933 (Knowlton); Salt Lake City, August 1933 (H.B.Stafford).
- F. laevis Stein. Garland, September 1925 (K.); Iosepa, August 1929 (K.); Kanab, August 1936 (K.-C.F.Smith); Kanonsville, May 1937 (Knowlton).
- F. scalaris Fab. Blanding, Farmington (K.); Logan, August 1936 (Harnston).
- Graphomyia maculata Scop. Eden, July 1937 (K.); Goshen, August 1937 (Knowlton); Logan, July 1936 (C.F.Smith); Taylor, May 1937 (Knowlton).
- Hannomyia personata Collin. Logan, May 1933 (T.O.Thatcher).
- Hebecnoma umbratica Mg. Logan, August 1934 (C.J.Sorenson).

- Helina bispinosa Meig. American Fork, August 1936 (K.); Manila, August 1937 (K.-Harmston); Syracuse, June 1935 (K.); Wanship, September 1937 (K.-Harmston).
- H. lysiniae Wlk. Blue Creek, September 1929 (K.); Kelton, June 1930 (Knowlton); Kanosville (D.E.Hardy); Logan and Wellsville (Knowlton).
- H. nigripennis Wlk. Kinball, August 1936 (C.J.Sorenson).
- H. troene Wlk. Kanosville, Hooper, Plain City, June 1937 (D.E.Hardy); Logan, Mapleton, June 1937 (K.-Harmston).
- Hydrophoria brunneifrons Zett. Farr West, February 1934 (W.L.Thomas); Kanosville, May 1937 (Knowlton).
- H. divisa Mg. Corinne, March 1934 (J.A.Rowe); Hooper, September 1937 (D.E.Hardy); Slaterville, June 1937 (Knowlton).
- H. occidentalis Meig. Hooper, May 1931 (K.); Huntsville, June 1937 (Knowlton); Paradise, May 1934 (Knowlton); Woodruff, July 1935 (Knowlton).
- Hydrotace arripes Fall. Hurricane, Logan, 1934-1936 (Knowlton); Parley's Canyon May 1909 (E.G.Titus).
- H. palaestria Meig. Strawberry Valley, 1935 (E.W.Anthon).
- Hylemyia abdona Mall. Logan, June (K.-Harmston); Huntsville (Knowlton).
- H. antiqua Meig. The onion maggot, Duchesne, July 1931 (K.); Logan, July 1935 (K.). Has caused damage to onions in several northern Utah localities.
- H. cilicrura Rond. The seed corn maggot, Lewiston, July 1933 (K.); Providence, June 1935 (K.); Roy, May 1934 (K.). Causes injury to bean, melon and other seed and young seedling, injury being most severe during cold, backward spring weather.
- H. coenosiae formis Stein. Logan Canyon, August 1937 (K.-Harmston).
- H. depressa Stein. Chester, June 1933 (Knowlton).
- H. montana Meig. Cedar City, July 1919.
- H. neomexicana Meig. Strawberry, July 1935 (E.W.Anthon).
- H. normalis Mall. Hooper, June 1937 (D.E.Hardy).
- H. occidentalis Meig. Logan Canyon, April 22, 1936 (Thatcher).
- H. pluvialis Mall. Amalga, June 1935 (J.A.Rowe).
- H. setifer Mall. Huntsville, June 1937 (Knowlton); Strawberry Valley, September 1933 (E.W.Anthon).
- H. variata Fall. Bear River City, October 1926 (Knowlton); Mendon, August 1937 (W.P.Nye); Paradise, September 1930 (Knowlton).
- Limnophora argentiventris occidentalis H. Providence Canyon, June 1933 (Knowlton-T.O.Thatcher).
- L. concolor Stein. Alton, July 1934 (Knowlton-C.F.Smith).
- L. discreta Stein. American Fork, August 1936 (Knowlton).
- L. narona Wlk. Cedar City, June 1919; Leeds, June 1935 (Knowlton); Springville, July 1937 (K.-Harmston); West Weber, August 1937 (Knowlton).
- Limosia nigrescens Stein. Logan Canyon, June 1934 (T.O.Thatcher).
- Lispe masoni Stein. Delle, August 1929 (Knowlton).
- L. patellata Ald. Sardine Canyon, June 1937 (Knowlton-Harmston).
- L. sociabilis Loew. Holladay, July 1937 (Knowlton).
- L. polita Coq. Bountiful, July 1937 (D.E.Hardy); Greendale, August 1937 (K.-Harmston); Hooper, September 1937 (Hardy); Vernal, June 1937 (Knowlton-Harmston); Wolf Creek Pass, September 1937 (Knowlton-Harmston).
- L. uliginosa Fall. Delle, August 1929 (K.); Dry Lake, July 1926 (K.); Strawberry Valley, September 1933 (E.W.Anthon); Syracuse (Knowlton-Harmston).
- Lispocephala rubricornis Zett. Logan Canyon, May 1934 (T.O.Thatcher).
- Lispoides aequifrons Stein. Greendale; Jensen, July 1937 (Knowlton-Harmston).
- Macrochis susoba Wlk. Hooper, July 1937 (D.E.Hardy); Lehi, June 1937 (Knowlton); Plain City, June 1937 (D.E.Hardy); Springville, June 1937 (Knowlton).
- Metopia leucocephala Rossi. Logan and Woodruff, July 1937 (Knowlton-Harmston).
- Morellia micans Macq. Logan, September 1934 (Knowlton).
- Muscina assimilis Mall. Lewiston, Mendon, July 1937 and Vineyard 1929 (K.).
- M. stabulans Fab. Delta, September 1935 (K.); Logan, April 1933 (Knowlton); Lucin, September 1934 (K.); Providence, July 1933 (Knowlton).

Myiospila mediotubunda Fab. Lohi and Perry, May 1937 (K.-Harmston); Logan, July 1937 (Knowlton); Riverview, September 1930 (Knowlton).
Neodoxiopsis ovata Stein. Blanding, June 1933 (Knowlton).
Ophya leucestoma Wd. St. George, May 1919.
Pachyophthalmus flavidus Tns. Central, July 1937 (Knowlton).
Paraglossa cinerella Fall. Snowville, May 1930 and St. George, April 1935 (K.).
P. radicum L. Logan, May 1935 (T.O.Thatcher).
Pegomyia affinis Stein. Centerville, June 1935 (Knowlton).
P. duplicata Mall. Beaver, May 1934 (Knowlton).
P. hyoscyami Panz. Ft. Duchesne, July 1931 (K.); Hooper, April 1933 (K.); Saratoga, July 1929 (Knowlton).
Phaonia aurea Mall. Trout Creek, July 1933 (H.B.Stafford).
P. fusca St. Hooper, June 1937 (D.E.Hardy).
P. nigricans Joh. Logan, April 1916 (C.J.Sorenson).
P. rufibasis Moig. Trout Creek, July 1933 (H.B.Stafford).
P. striata Stein. Logan Canyon, July 1937 (Knowlton-Harmston).
Phyllogaster litteralis Moig. Hooper, June 1937 (Hardy); Trenton (H.J.Pack).
P. parvimaclulatus Stein. Ogden, June 1937 (D.E.Hardy).
P. unica Stein. Bothwell and Garland, July 1930 (K.); Delle, August 1929 (K.); Monument, June 1930 (K.); Petersburg, August 1936 (Knowlton).
Pollonia rudis Fab. Distribution state wide, common.
Schoenomyza dorsalis Loew. Kanabville, May 1937 (Knowlton); Logan, September 1934 (Knowlton); Skull Valley in Tooele County, April 1937 (Knowlton-H.E.Derst).
S. suffuricops Mall. Lampo, Woods Cross, October 1933 (Knowlton).
Senotainia flavicornis Tns. Central Utah, July 1937 (Knowlton).
S. rubriventris Mgt. Lohi, June 30, 1936 (H.F.Thornley).
S. trilineata v.d.W. Northern Utah, June-August 1937 (Knowlton).
Sphenometopa tergata Coq. Sardine Canyon, August 8, 1937 (Knowlton-Harmston).
Spilaria lucorum Fall. Bellevue, June 1929 (K.); Ft. Duchesne, September 1932 (F.K.Stoffers); Logan and Mills, May 1933 (K.); Monroe, Weber (Knowlton).
Spilopoma argentiventris var. occidentalis Hkt. Centerville, Sunset, May 1937 (Knowlton-Harmston); Draper (Knowlton); Fielding, September 1935 (Knowlton).
Spilopoma acuticornis Mall. Duchesne, Logan Canyon, Woodland, September (K.-H.).
S. leucogaster Zett. Manila, August 11, 1937 (Knowlton-Harmston).
Taxigramma heteroncura Mg. Garden City, July 25, 1937 (Knowlton).

Family GASTROPHIDIDAE - Horse Bot Flies

Gastrophilus haemorrhoidalis L. The nose bot fly, Logan Canyon, August 1935 (Knowlton-Smith); Ouray, July 1935 (Harmston).
G. intestinalis DeG. The horse bot fly, Boneta, September 19, 1935 (Harmston); Randolph, August 17, 1936 (C.J.Sorenson).
G. veterinus Clark. The chin fly, Lohi, September 5, 1936 (H.F.Thornley).

Family CUTEREBRIDAE - Robust Bot Flies

Cuterebra approximata Wlk. Logan and Whiterocks, July-August (K.-Harmston).
C. princeps Aust. Dry Gulch, Duchesne County, July 7, 1935 (Harmston).

Members of this family have been reared from wild rabbits in Utah and a large grub crawled from the neck of a pack rat killed in Logan Canyon during September 1936. Attempts to rear this maggot were unsuccessful (Knowlton).

Cephenomyia sp. Bots of this fly were abundant in the head and throat of dead deer examined in Logan Canyon during late winter and spring of 1936 and 1939. Deer recently killed by mountain lions and those dead, apparently for a week or more, still contained large numbers of live maggots. Several adults were reared from mature maggots which pupated in moist sand.

Family HIPPOBOSCIDAE - Bird Parasite Flies

- Lynchia fusca Macq. Park Valley, May 22, 1934 (R.C. Roskelley).
L. pallidilabris Rond. Richfield, on red-tailed Hawk.
Melophagus ovinus L. The sheep tick is a serious pest of lambs and undipped sheep throughout Utah.

Family DOLICHOPODIDAE - Long Headed Flies

F. C. Harmston and G. F. Knowlton

The writers have made a special study of this family and its occurrence in Utah.

- Argyra albicans Lw. Edon, June 13, 1938 (Hardy-Stains).
A. argentiventris V.D. Smithfield, July 7, 1937 (C.F. Smith-Harmston).
A. robusta Johns. Blacksmith Fork, June 20, 1937; Garden City, Roosevelt and Wellsville, June-August.
Asyndotus amophilus Lw. Wellsville, July 7, 1927.
A. latus V. D. Anslga, June 30, 1937; Sunset; Weber County.
A. nigripes V. D. Hooper, June 15, 1937, Kaneshville and Ogden (Hardy).
Campicnornis arcuatus V. D. Hyde Park, June 13, 1938 (Hardy-Stains); Roosevelt.
C. degener Whlr. Laketown, September 2, 1938; Logan.
C. nigrinus V. D. Brigham, Calloo, Logan, Randolph and Trout Creek, June-September 1937-1938.
C. philoctes Whlr. Garden City, Grass Creek, Laketown, Randolph, Roosevelt and Woodruff, April-September 1937-1938.
C. thersites Whlr. Antimony, Castle Rock, Hurricane, Laketown, Logan and Randolph, July-September 1938-1938.
Chrysotus argentatus V. D. Woodruff, August 10, 1937.
C. barbatus Lw. Bear River City, Moab, Orderville, North Logan and Portage, June-September, 1937-1938.
C. hirtipes V. D. Anslga, Brigham City, Cedar Breaks, Garden City, June 1938.
C. obliquus Lw. Bluff and Hyde Park, July 1938.
C. parvulus V. D. Collinston and Moab, August 1937.
C. picticornis Lw. Bluff, Brigham City, Indian Creek and Vernal, June-August, 1937-1938.
C. tibialis V. D. Brigham City, Cedar Breaks, Laketown, Logan, June-September.
Diaphorus aldrichi V. D. Corinne, Elberta, Kaneshville, Logan, July-September, 1937.
D. fuscus V.D. Hooper, June 17, 1937 (D.E. Hardy).
D. occidentalis V. D. Brigham, Farmington, Hooper, Logan, Smithfield and Springville, May-August, 1936-1938.
D. quadratus V. D. Anslga, Bluff, Elberta, Moab, Sandr, June-August 1937-1938.
D. palpiger Whlr. Very common throughout Utah, May-August, 1936-1938.
D. triangulatus V.D. Bluff and Moab, May-August, 1938.
Dolichopus acuminatus Lw. Benson, Centerville, Ft. Duchesno, Monden, Minersville and Spanish Fork, June-August, 1936-1938.
D. adaequatus V. D. Beaver, Dreyer, Huntsville, Hyde Park, Marysville, Mono, Ogden, and Wolf Creek Pass, June-August 1937-1938.
D. annicola M.-R. Common in most Utah localities, July-September, 1936-1938.
D. appendiculatus V. D. Junction, Lon, Marysville, Mt. Home, Portage and Wolf Creek Pass, June-August, 1937-1938.
D. bakori Cole. Bluff, Butlerville, Ft. Duchesno, Goshen, Greendale, La Sal, Moab, Monticello, Randolph, Roosevelt and Trout Creek, June-September.
D. barbicauda V. D. Roosevelt, August 13, 1937.
D. barbipes V. D. Brigham, Hooper, Kaneshville, June 1937; Lewiston, North Logan.
D. bifractus Lw. Beaver Creek of Logan Canyon, August 29, 1937.

- D. coloripes V. D. Park City, August 14, 1936.
- D. coloradensis Ald. Castleton, La Sal, Roosevelt, July-August, 1937-1938.
- D. consanguineus Whlr. Colton, Duchesne, Greendale, Heber, Huntsville, Manila, Miners Basin, Poca, Roosevelt, Snyderville, Trout Creek and Wolf Creek Pass, July-September, 1936-1938.
- D. conspectus V.D. Taken throughout Utah, June-August, 1936-1938.
- D. coquilotti Ald. Amalga, Corinne, Ft. Duchesne, Hooper, La Point, Murray, Roosevelt and Wolf Creek Pass, June-September, 1937-1938.
- D. crenatus O. S. Greendale, Hooper, La Point, Logan and Salina, June-September.
- D. cuprinus Wied. Common in most Utah localities, June-August, 1936-1938.
- D. duplicatus Ald. Logan Canyon, September 19, 1938 (W.P.Nye).
- D. enigma M.-B. Ogden, June 20, 1937 (D.E.Hardy).
- D. idahoensis Ald. Common throughout Utah, July-September, 1937-1938.
- D. latipes Lw. Ft. Duchesne, La Point, Logan, Roosevelt, Wellsville, June-August.
- D. lobatus Lw. Ft. Duchesne and Roosevelt, June 28, 1937.
- D. myosota O. S. Blacksmith Fork Canyon and Logan Canyon, August 1937; Hooper, August 1937 (Hardy).
- D. nigricauda V. D. Very common in Utah, June-August.
- D. nigricornis Moig. Mt. Home and Roosevelt, August 1938.
- D. nubifer V. D. Logan, June 28, 1937.
- D. obcordatus Ald. Common in many Utah localities, May-July.
- D. opportunus V.D. Logan and Roosevelt, August 1937.
- D. paluster M.-B. Logan Canyon, July 4, 1937 (C.F.Smith-Harnston).
- D. penicillatus V. D. Collected throughout Utah, June-September.
- D. plumipes Scop. Found throughout Utah, May-September.
- D. procerus V. D. A common species in Utah, May-September.
- D. ramifer Lw. Found in most Utah localities, May-October.
- D. renidescens M.-B. Ft. Duchesne, Laketown, Logan Canyon, Mendon and Roosevelt, June-August.
- D. sedulus V. D. Amalga and Hyrum, July 1937.
- D. socius gladius V. D. Richmond, August 19, 1938 (Hardy-Stains).
- D. speciosus V. D. Manila, August 11, 1937.
- D. squamosus V. D. Duchesne, Greendale, Manila, Roosevelt and Wolf Creek Pass, August 1937-1938.
- D. sufflavus V. D. Ft. Duchesne, Greendale, Logan Canyon, Manila and Wolf Creek Pass, June-September 1937-1938.
- D. varipes Coq. Logan Canyon, Manila, Miner's Basin, Wolf Creek Pass, August.
- D. viridis V. D. Circleville, Greendale, Koosharem, Manila, Panquitch, Teasdale and Wolf Creek Pass, August 1937-1938.
- Gymnoptermus californicus V. D. Widely distributed in Utah, June-August.
- Hercostomus metatarsalis Thoms. Wolf Creek Pass, September 2, 1937.
- H. unicolor Lw. Found throughout Utah, June-August, 1936-1938.
- Hydrophorus aestuum Lw. Delta, July 5, 1938 (Stains); Myton.
- H. altivagus Ald. Centerville, May 2, 1937.
- H. aquatilis Ald. Roosevelt, June 27, 1937.
- H. gratiosus Ald. Brigham, Eden, Manila, Ogden, Tooele, Yost, May-September.
- H. magdalenae Whlr. Throughout Utah, June-October.
- H. philomereus Whlr. Northern Utah, July-August.
- H. sodalis Whlr. Logan Canyon and Manila, August 1937-1938.
- Liancalus hydrophilus Ald. Logan Canyon, October 3, 1937 (Hardy); also Maple Canyon (D.M.Rees) through courtesy of the University of Utah Zoology Dept.
- L. querulus O. S. Ogden Canyon, October 9, 1937.
- Maddeterus petuleus Whlr. Duchesne, September 3, 1937.
- M. veles Lw. Delta, July 5, 1938 (Stains); Elsinore, Lewiston and Showell, June 1937.
- Mesorhaga albiciliata Ald. Amalga, Farmington, Hooper and Logan, July 1937.
- M. townsendi Ald. Zion National Park, June 18, 1934.
- Neurigona tibialis V. D. Logan Canyon, July 15, 1938 (W.P.Nye).

[The text in this block is extremely faint and illegible, appearing as a series of horizontal lines and scattered characters across the page.]

- Parasyntormen asellus Whlr. Bear River City, Logan, Murray and Roosevelt, June, August, 1937-1938.
- P. emarginatum Whlr. Burbank, Corinne, Ft. Duchesne, Jensen, Junction, Marysville, Moab, Monticello, Salt Lake City, Valencia, May-September, 1937-1938.
- P. fraterculus V. D. Bluff and St. George, May-October, 1938.
- P. himmulus Whlr. Bluff, May 21, 1938.
- P. lepus V. D. Brigham, Kingston and Lakotown, June 1938.
- P. montivagum Whlr. Mantua, Monticello, Mt. Home, Soldier Summit and Yost, June-September, 1938.
- P. occidentale Ald. Lakotown, July 12, 1938.
- P. utahum V. D. Blue Creek, September 2, 1938.
- Polastoneurus aldrichi V. D. Widely distributed in northern Utah, July-August.
- P. cyaneus Whlr. Hooper, Indian Creek, La Sal, Moab, Monticello, Ogden, Roosevelt, Salina and Vernal, June-September, 1936-1938.
- P. tibialis V. D. Corinne, Green River, Leeds, Moab, Monticello, Wolf Creek Pass and Yost, June-September, 1937-1938.
- P. vagans Lw. A very common species in Utah localities, June-September.
- Rhaphium effilatus Whlr. Amalga, Centerville, Huntsville, Marysville, Roosevelt and Wanship, July-August, 1937-1938.
- R. femineum V. D. Moab, September 4, 1937.
- R. femoratum V. D. Widely distributed in Utah, May-September.
- R. longipalpus Curr. Garden City, June 10, 1938.
- R. spineitarsus Curr. Greendale, Howell, Junction, Marysville, Monticello, Panquitch, Roosevelt and Sardine Canyon, June-September, 1937-1938.
- R. triangulatum V. D. Amalga, Ft. Duchesne, Logan, Monticello, Mt. Pleasant, Smithfield and Wellsville, June-August, 1936-1938.
- Scellus crinipes V. D. Brigham City, Cornish, Logan, Ogden, Provo, Syracuse, Tooele and Trenton, June-August.
- S. exustus Walk. Found throughout Utah, June-August.
- S. filiferus Lw. Greendale, August 11, 1937.
- S. monstrosus O. S. Lakotown, Monticello, Strawberry Valley and Woodruff, July-October, 1933-1938.
- S. vigil O. S. Logan Canyon, Murray, Strawberry Valley and Wolf Creek Pass, August-September, 1937-1938.
- Sympycnus calcaratus V. D. Oak Creek Canyon, September 15, 1938 (Stains).
- S. canadensis V. D. Syracuse, June 24, 1935.
- S. ciliferatus V. D. Hooper, June 15, 1937 (D.E.Hardy).
- S. clavatus V. D. Duchesne, Hooper, Ogden and Roosevelt, June-September.
- S. clavicornis V. D. Cedar Breaks, August 3, 1938.
- S. cuprinus Whlr. Kanosh, Logan Canyon and Miner's Basin, August 1938.
- S. distortus V. D. Soldier Summit, July 29, 1938.
- S. narcidus Whlr. Daniels Canyon, Duchesne, Garden City, Wanship and Woodland, July-August, 1937-1938.
- S. nodatus Lw. Duchesne, September 3, 1937.
- S. oreas Whlr. Cedar Breaks, August 3, 1938.
- S. pugil Whlr. Logan Canyon and Miner's Basin, July 1938.
- S. pulvillus V. D. Logan Canyon, August 26, 1937.
- S. tripilus V. D. Logan Canyon, August 1937.
- S. vegetus Whlr. Occurs in most Utah localities, June-September.
- Syntormen cinereiventris Lw. La Sal, Moab and Wolf Creek Pass, June-August.
- S. dissimilipes V. D. Throughout Utah, June-August.
- S. ornatipes V. D. Miner's Basin in Grand County and Wolf Creek Pass, July 1938.
- S. palmare Lw. Altonah and Mt. Home, August 1938.
- S. strataegum Whlr. Blue Creek, Delta, Hooper, La Sal, Monticello, Redmond and Roosevelt, April-August, 1936-1937.
- S. tricoloripes Curr. Logan Canyon, Monticello, Strawberry Valley and Yost, July-September 1936-1938.
- Tachytrechus angustipennis Lw. Bellevue, Cone Springs in San Juan County and La Sal, June-October 1938.

The first part of the paper is devoted to a general discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The second part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The third part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The fourth part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The fifth part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The sixth part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The seventh part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The eighth part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The ninth part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe. The tenth part of the paper is devoted to a detailed discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of the universe.

- T. auratus Aldr. La Point, June 28, 1937.
T. bipunctatus Greene. Garden City and Logan Canyon, June-August, 1937-1938.
T. granditarsus Greene. La Sal, St. George and Wolf Creek Pass, July-October.
T. olympiae Aldr. Leeds, September 12, 1938.
T. sanus O. S. Greendale, Logan Canyon, Roosevelt and Wolf Creek Pass, July-Aug.
T. simulatus Greene. Manila, August 11, 1937.
Thinophilus depressus V. D. Hooper, Leeds and Wolf Creek Pass, June-September.
T. pectinifer Whlr. Logan Canyon, August 1, 1937.
T. spinipes V. D. Brigham City, June 10, 1938 (Knowlton-Hardy).
Thrypticus fraterculus Whlr. Bluff, Greendale, La Sal, Moab and Vernal, June-August, 1938.

Family CONOPIDAE - Thick-headed Flies
G. S. Stains-G. F. Knowlton

- Conops fronto Will. St. George, May 24, 1919; Smelter near Lake Point, July 8, 1909 (E. G. Titus).
C. fraterculus V.D. Logan, August 1925 (H.J. Pack).
Physocephala buccalis V.D. Montidello, August 26, 1938 (K.-Harmston); Logan; Neola; St. George; Woodruff August 9, 1938 (Knowlton-Harmston).
P. burgessi V.D. Logan, July 1, 1935 (Harmston); Marysville; Miners Park; Ogden; St. George, May; Smelter near Garfield (Knowlton-Harmston).
P. humeralis V.D. Boulder, July 4, 1938 (K.-Harmston); Logan; Minersville; Pincher Creek, August 24, 1935; Salina; Springville.
Zodion fulifrons Lw. Blacksmith Fork Canyon, June 9, 1935; Corinne; Cache Junction; Indian Creek, August 25, 1938 (K.-Harmston); Ogden; Logan Canyon; Promontory; Plain City; Wanship, September 3, 1938.
Z. obliquefasciatum Macq. Flowell, August 17, 1938 (K.-Harmston); Kanab; Logan; Ogden; Provo Canyon; Plain City, July 1937; Spanish Fork.
Z. obscurum Bks. Logan Canyon, July 17, 1937 (K.-Harmston); Mills.
Z. sayi Bks. Beaver, August 14, 1937 (K.); Snowville; Logan, July.
Z. pygmaeum Will. Wolf Creek Pass, August 15, 1937 (Knowlton); Oakley, September 2, 1937 (K.). Common throughout Utah.
Z. perlongum Coq. Blacksmith Fork Canyon; Greendale; Logan; Ogden; Providence Canyon, June 1933 (Thatcher); Roosevelt; Wolf Creek Pass, September.
Myopa rubida Bigot. Benson; Logan Dry Canyon; LaPoint; Maroni; Spanish Fork, May 12, 1938 (Knowlton-D.E.Hardy).
M. vesiculosa Say Glendale, August 11, 1937 (K.-Harmston).
Oncomyia aequalis V.D. Flowell, August 17, 1938 (K.-Harmston); Logan; Logan Canyon; Laketown; Riverside, August 12, 1938.
O. baroni Will. Farmington; Logan Canyon, August 10, 1938 (Hardy-Stains); Paradise; Strawberry Valley.
O. loraria L.W. South Fork of Provo Canyon (Hardy).
O. modesta Will. American Fork; Butlerville, June 10, 1937 (Knowlton); Garden City; Hooper; Logan Canyon, August 10, 1938; Ogden Canyon; Plain City; Salt Lake City; Tooele.
O. nigra V.D. Monarch, September 3, 1937; Grover, September 9, 1938.
Dalmannia vitosa Coq. Richmond, May 12, 1938 (D. E. Hardy); Draper.

Larvae of thick-headed flies are parasitic chiefly upon bumblebees and wasps. A few species are known to infest grasshoppers and their eggs. Conopid fly eggs sometimes are deposited directly upon the host insect during flight.

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Utah Agricultural Experiment Station
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UTAH INSECTS

HEMIPTERA 1/

G. F. Knowlton and F. C. Harmston
 Department of Entomology

Many species of Hemiptera occurring in Utah are injurious to cultivated or range plants; a few are household pests. Because of their entomophagous food habits a number should be regarded as beneficial.

Family SCUTELLERIDAE (Leach)

- Tetyra robusta Uhl. Cedarview, June 15, 1935 (F. C. Harmston 2/); Jordan Narrows (R. C. Roskelley).
Homocamus aeneifrons (Say). Card Canyon of Logan Canyon, July 24, 1938 (W. P. Nye).
H. bijugis Uhl. Roy, June 24, 1938; Cache Junction, Corinne (H. R. Hagen), Greendale (C. J. Sorenson), Hooper, Kaysville, Logan Canyon (W. W. Henderson), Ogden, Parley's Canyon, Roy, Thatcher.
Eurygaster alternatus (Say). Bear River Bay, Corinne (K.-C.F. Smith), Farmington, Ft. Duchesne (F. K. Stoffers), Juab, Logan (K.-W.L. Thomas), Providence (M. J. Janes), Soldier Summit, Springville (E. W. Anthon), St. George (H. J. Pack), Vernal.

Family CYDNIDAE (Billberg)

- Cydnoides ciliatus (Uhl.) Elsinore, Strawberry, June 1933.
Corimelaena extensa Uhl. Joseph (E. G. Titus), Logan, Monroe, St. George, June 1928 (H. J. Pack).
C. pulicaria (Germ.). Blacksmith Fork Canyon (D. E. Hardy), Greenville, Joseph (E. G. Titus), Layton, Logan.
Pangoeus discrepans Uhl. Indian Writings, San Rafael Swell, September 13, 1937 (W. P. Nye).

Family PENTATOMIDAE (Leach)

- Brochymena sulcata (Van D.). Logan, July 1, 1934 (E. Gardner), Park Valley, March 22, 1934 (R. C. Roskelley), several taken at Farmington in earwig traps during 1939.
B. 4-pustulata (Fabr.). Bountiful, Farmington in European earwig traps, Gunnison, Logan, Moab, Providence (D. M. Hammond) Ogden.
B. tenebrosa Walk. Salt Lake City, Tooele, Vernal.
Peribalus abbreviatus (Uhl.). Brigham Canyon, July 1937, Ft. Duchesne (F. K. Stoffers), Lehi, Logan (T. O. Thatcher), Trenton.
Peribalus libolarius Stal. Ft. Duchesne (C. J. Sorenson), Iosepa, Logan Canyon, Providence (C. F. Smith), Park Valley.
P. piceus (Dall.). Logan Canyon, June 26, 1938 (W. P. Nye).

1/ The writers are indebted to Mr. H. G. Barber of the U. S. Bureau of Entomology and Plant Quarantine for identifying most of the material here recorded.

2/ Unless otherwise indicated, collections were made by one or both of the writers.

Rhytidolomia faceta (Say). Brigham (K.-Hardy), Blue Creek (K.-Smith), Garland, Midvale, Richfield.

Trichopepla aurora Van D. Logan, July 21, 1936 (R. E. Nye).

Chlorochroa uhleri Stal. Sometimes injures heads of developing wheat; often present in fields together with C. sayi Stal which commonly is much more abundant and injurious in small grain fields. Collected on alfalfa at Benson (C. J. Sorneson), Bountiful, Clarkston, Delta, Duchesne, Grantsville, Hyrum, Logan; on sugar beets at Bear River City, Hooper, Layton, Lewiston, Logan, Roy, Utah Hot Springs; on potatoes at Magna, Nephi, Toccole, and Vernon; on barley and Russian-thistle at Blue Creek; on wheat, barley and willows at Bountiful; on wheat at Fillmore, Grantsville, Howell, Lakepoint, Mendon, Mona, Starr, Valverda; on Atriplex rosea at Delta; rose at Granite; Cleome lutea at Grantsville, Skull Valley and Blue Creek; raspberries at River Heights; peas at Riverdale; on Bassia hyssopifolia at Kelton; Russian-thistle, Promontory.

C. sayi Stal. Say's plant bug frequently injures developing wheat kernels, other small grains, developing alfalfa seed-pods; it also feeds on asparagus, alfalfa, beans, peas, grasses and other plants. Collected in Utah on wheat at Bountiful, Erda, Grafton, Logan, Parowan, Penrose, St. George, Starr, Valverda; on dewberries at Granite; potatoes at Parowan; on Russian-thistle at Mills; Lupinus at Enterprise; on Cleome lutea at Cedar City and Virgin; raspberries at Bountiful and Farmington.

C. ligata (Say). On strawberry at Providence, March 6, 1936 (K.-M. W. Allen); Granite, Greendale (C. J. Sorenson); Logan, Park Valley (R. C. Roskelley), Salt Lake City.

C. persimilis Horv. On sugar beets at Spanish Fork; on Artemisia tridentata at Logan (K.-M. J. Janes); Amalga, College Ward, Farmington, Lapoint (C. J. Sorenson), Logan Canyon (R. E. Nye), Providence (R. L. Janes).

Carpocoris remotus Horv. On Norta altissima at Blue Creek, June 30, 1932; on Salsola pestifer at Petersburg (K.-C. F. Smith); on Cleome lutea at Brigham, Castle Gate, Collinston, Fillmore, Joseph (J. A. Rowe), Lewiston, Logan, Roosevelt, Snowville, Soldier Summit, Thompsons, Vernal.

Euschistus impictiventris Stal. Geneva, September 20, 1930.

E. inflatus Van D. Damaging rhubarb stems at Roy, May 2, 1938 (Knowlton); Logan (R. E. Nye), Riverdale (K.-D. E. Hardy), Logan (W. W. Henderson), Ft. Duchesne (F. K. Stoffers), Brigham, on strawberry at Providence (K.-Smith)

E. tristigmus (Say). Monroe, July 23, 1938.

E. variolarius (P. B.). Collected on sugar beets at Geneva, Hyde Park, Lake View, Linden, Logan, Mapleton, Payson, Spanish Fork; on strawberries at Providence (K.-Smith); Ft. Duchesne (L. Cutler), Charleston, Henefer (C. J. Sorenson), Eden.

E. ictericus (L.). Nibley on cow parsnip and Cuscuta, Sept. 19, 1938; Randolph.

Coenus delius (Say). Ogden, Utah Hot Springs, August 1, 1938.

Neottiglossa tumidifrons Van D. Farmington, June 12, 1935 (E. W. Anthon).

N. undata (Say). Huntsville, September 21, 1938.

Cosmopepla bimaculata (Thom.). Logan, June 1926.

C. lintneriana Kirk. Eden July 10, 1937, Huntsville, Riverdale, Wellsville, Woodruff, September 10, 1937.

C. uhleri Montd. Logan, May 1936 (T. O. Thatcher), June (R. E. Nye).

C. conspicillaris (Dall.). Hyrum, July 1932.

Eysarcoris intergressus Uhl. On currant at Perry, June 3, 1935, (K.-C. F. Smith) and Logan; on Lupinus at Big Cottonwood Canyon; on gooseberry at Farmington, Providence.

Prionosoma podopioides Uhl. Roosevelt, July 1935.

Thyanta custator (Fabr.). The red shouldered plant bug has been collected on alfalfa at Meadow, barley at Vernon, beans at Mantua, beets at Farmington, grapes at Taylorsville, grass at Clarkston, dewberries at Granite (K.-M. W. Allen) and Providence (K.-Smith), Lupinus at Enterprise and

- in Dixie National Forest, Salix at Peterson, tomatoes at Roy, strawberries at Orem and on wheat at Grafton, St. George and Wellsville.
- T. rugulosa (Say). On Russian-thistle at Orr's Ranch, Hinckley (H. J. Pack), Howell on Atriplex argentea, Junction, Logan, Monroe (H. E. Dorst), Orem, Promontory, Smithfield, Snowville, Trout Creek (H. B. Stafford).
- T. punctiventris Van D. Collected upon Atriplex rosea at Desert, Green River, Iosepa, Locomotive Springs, Mills, Rosette, Skull Valley, Yost; on A. argentea at Lampo; on Salsola pestifer at Corinne, Curlew, Flux, Orr's Ranch, Snowville, Timpie, Vernal.
- T. brevis Van D. Grantsville (K.-M. J. Janes), Logan (L. Greene), Ft. Duchesne (F. K. Stoffers), Trout Creek (H. B. Stafford).
- T. accerra McA. On wheat, Wellsville, August 12, 1929 (H. J. Pack), Lehi.
- Acrosternum hilaris (Say). The green soldier bug attacks apple, bean, box elder, cabbage, catalpa, corn, dogwood, eggplant, elderberry, linden, maple, several mustards, peas, peaches, pears, turnip and a number of other hosts. Collected on Virginia creeper at Clinton, cherry and tomato at Farmington, strawberry foliage at Granite, sugar beets and apricots at Ogden, cherry and raspberry at Orem, apricots and peas at Sunset. Also collected at American Fork, City Creek Canyon, Delta, Logan Canyon, Oak Creek Canyon (L. Jeppsen), Providence, Spanish Fork, Springville (E. W. Anthon).
- Banasa dimidata (Say). On Rosa fendleri, Logan Canyon (T. O. Thatcher), Logan (C. F. Smith); Hooper, Connelley Hollow (Rich County).
- B. sordida Uhl. Oak Creek Canyon, July 21, 1936 (L. Jeppsen).
- B. euchlora Stal. Cedar City, June 5, 1938, at light (K.-D. L. Sargent), Logan.
- Perilus bioculatus (Fabr.) Three specimens taken on potato plants, feeding upon slugs of the Colorado potato beetle at Sunset, July 6, 1933; Ft. Duchesne, (F. K. Stoffers), Hooper, feeding on cutworm at Kaysville, Logan (G. Linford), Park Valley, Riverdale, Snowville.
- P. bioculatus var. clanda (Say). On sugar beets, Lynndyl, July 1, 1926.
- P. exaptus (Say). Brigham (K.-Hardy-G. S. Stains), Orem (K.-Smith).
- Zicrona caerulea (L.). Logan Canyon (K.-R. E. Nye).

Family COREIDAE (Leach)

- Leptoglossus occidentalis Heid. Blacksmith Fork Canyon, Zion National Park, April, 1938 (G. S. Stains), Logan, Park Valley.
- L. clypealis Heid. On Atriplex at Blue Creek, Deep Creek, Logan, Trenton.
- Chelinidae vittiger Uhl. On beats at Farmington, at Cedar Creek, Cedar View, Curlew, Lehi, Logan, Myton, Park Valley (R. C. Roskelley), Salt Lake City (W. W. Henderson), Taylor, Trout Creek (J. A. Rowe-C. F. Smith), Zion National Park (G. S. Stains).
- Anasa tristis (DeG.). Squash bug. This serious squash pest was killing melon plants at Bountiful and Centerville during 1938 and 1939, some patches having 80 to 90 percent of the plants destroyed and as many as 135 bugs on some still living melon plants at the time fields were examined. Squash vines frequently are killed by the attack. Collected at Amalga, Castleton (C. J. Sorenson), Ft. Duchesne, Lewiston, Logan, Logan Canyon, Moab, Providence, Smithfield, Syracuse, St. George (Pack).
- Darmistus subvittatus Stal. Moab, August 25, 1938.
- Megalotomus 5-spinosus (Say). Logan, August 1936.
- Alydus eurinus (Say). Eden, August 25, 1938 (K.-D. E. Hardy), Farmington (K.-Stains), on alfalfa at Hooper, at Park City, Pine Valley,
- A. tomentosus Frack. Park City, September 15, 1936.
- A. conspersus Montd. Ft. Duchesne, Lapoint, on wheat at Lewiston, Logan (W. L. Thomas), Providence (M. J. Janes), Springville (E. W. Anthon), and on alfalfa at Trenton (C. J. Sorenson).

A. pilosulus H. S. Roosevelt, August 23, 1936 (C. J. Sorenson).

Harmostes reflexulus (Say). Cache Junction, on Lepidium perfoliatum at Corinne and Ft. Duchesne, on Chrysothamnus nauseosus at Iosepa, Roosevelt, Kaneshville and Logan, on Solidago in Logan Canyon, Newton (Pack), at Providence Canyon (Pack), Richfield, Stansbury Island (K.-W.L. Thomas), Sunset, The Belle, Trenton (K.-W.P. Nye), on wheat at West Weber (C. J. Sorenson).

Corizus hyalinus (Fabr.). The hyaline grass bug has been collected in Utah on alfalfa at Newton, Ogden, Providence; on barley at Clover; on sugar beets at Fielding, Hooper, Lehi, Sandy, Willard; on Chrysothamnus at Clover, Skull Valley, Virgin (K.-Smith); on clover at Tremonton; on currants and gooseberries at River Heights and Providence (K.-Smith); on strawberries at Providence (K.-Smith-Rowe, Thatcher); on tomato at Hooper, Ogden and Spanish Fork; on Salsola pestifer at Lamo, Snowville, St. George, Skull Valley and Timpie; on wheat at Tintic Junction (C. J. Sorenson).

C. viridicatus Uhler. On potatoes at Riverdale, Blanding, Brigham, Magna, Trout Creek (H.B. Stafford), Verdure.

C. crassicornis (L.). The variable grass bug, Curlew, on Salsola pestifer at Hardup, Hatch, Logan (Thomas), Logan Canyon (Thatcher).

C. lateralis (Say). Amalga, Blue Creek, Dolomite, Farmington, Hurricane, Logan, Ogden (K.-Stains), Wellsville.

C. punctiventris Dall. Acola, Logan Canyon (D.E. Hardy), on yarrow at Trenton (K.-W.P. Nye), Woodruff (K.-Hardy).

C. validus Uhl. Farmington, May 14, 1937, Logan (C.L. Nielsen).

C. scutatus (Stal). Farmington, June 8, 1935 (E. W. Anthon).

C. plutonius Baker. Eden, July 10, 1937.

C. indentatus Hambl. Farmington (F. H. Gunnell), Hooper (D.E. Hardy), Logan Canyon (W. P. Nye), Manila (C. J. Sorenson).

Leptocoris trivittatus (Say). The box elder bug is a common household nuisance in many parts of Utah. Observed at Cove and other localities often in large numbers, attacking ripening apples, pears, peaches and plums.

Family ARADIDAE (Spinola)

Aradus lugubris Fall. Ogden 1937 (D.E. Hardy).

A. vadosus Van D. Card Canyon of Logan Canyon, July 3, 1937 (R.E. Nye).

Family NEIDIDAE (Kirkaldy)

Neides muticus (Say). The mutic stilt bug is common in some environments, being predacious on the beet leafhopper in Utah sugar-beet fields. Observed to be feeding on Eutettix tenellus in beet field at Hooper and Garland and at Magna on this insect on Bassia hyssopifolia. Also collected Blacksmith Fork Canyon (D.E. Hardy-A. T. Hardy), Logan, Logan Canyon (R. E. Nye), Oak Creek Canyon (G.S. Stains).

Jalysus spinosus (Say). Feeds upon tomatoes, potatoes and other Solanums. Collected at Blue Creek, Leeds (K.-Smith), Logan, Logan Canyon (Thatcher), Price, Springville (K.-C.F. Smith).

J. wickhami Van D. Benson, Brigham (Hardy-Stains), City Creek Canyon, Corinne, Eden (K.-Hardy), Harrisville, Huntsville, Hurricane, Hyde Park, Logan (R. E. Nye), Logan Canyon, Moab, Uinta, Utah Hot Springs.

Acanthophysa echinata Uhl. Santa Clara, June 16, 1935.

Family LYGAEIDAE (Schilling)

Lygaeus reclivatus Say. Logan, feeds on Asclepias.

L. kalmii Stal. Bountiful, Corinne, Dolomite, Harrisville, Lakepoint (Pack), Lehi, Logan, Manila (C. J. Sorenson), St. George, Snowville, Strawberry

- Reservoir (E. W. Anthon), Trout Creek (H.B. Stafford).
- L. pyrrhopterus Stal. Logan Canyon, July 25, 1938 (K.-D.E. Hardy).
- L. bicrusis Say. Blacksmith Fork Canyon, June 1937 (K.-Smith), Green Canyon, April 1936 (R.E. Nye).
- L. lateralis Dall. At light and on dewberry foliage, Granite, June 1936 (K.-M. W. Allen), Green River, June 1938, Spanish Fork.
- Nysius ericae (Schill.) The false chinch bug is a common pest of sugar beets, grasses, potatoes, turnips, radishes, several other garden vegetables, and feeds also upon alfalfa, small grains, strawberries, dewberries and raspberries. Common throughout cultivated areas of Utah.
- N. ericae minutus Uhl. Logan Canyon (T.O. Thatcher), Ogden (R.C. Roskelley), Spanish Fork (D.E. Hardy).
- N. californicus Stal. American Fork, Cisco, Ephraim, on Atriplex rosea at Grantsville, Indian Creek, Layton, Mt. Pleasant, Plain City, on Salsola pestifer at Promontory (K.-M.J. Janes), Richfield, Spanish Fork, Wellington, Wellsville.
- N. coloradensis Baker. Plain City, August 5, 1903 (E. G. Titus).
- N. strigosus Uhl. San Rafael Swell, September 12, 1937 (W.P. Nye). (Also collected at Jackson, Wyo., July 19, 1936).
- Arphnus tristis Van D. Spanish Fork, May 13, 1936 (K.-Smith).
- A. coriicipennis (Stal.) Callao, Lehi, Spanish Fork, August 2, 1938 (D.E. Hardy-C.B. Corbett), Riverton.
- Cymus luridus Stal. Morgan, August 5, 1938 (K.-Stains). (Also collected at Ft. Bridger, Wyo.)
- Geocoris bullatus (Say). Greendale and Thompsons, 1937, Eden, July.
- G. pallans Stal. Genola, Greendale, Jordan Narrows, Little Mountain (K.-H.E. Dorst), Logan, Logan Canyon, Minersville, Ogden, Orem.
- G. decoratus Uhler. A common predator throughout Utah on the beet leafhopper, Eutettix tenellus, and upon Empoasca species in potato fields. Observed also to feed upon nymphal Nysius ericae and Lygus elisus, adult Chloropisca glabra, alfalfa weevil larva and on pea aphids of all sizes.
- G. atricolor Montd. Brigham, Ft. Duchesne and Lapoint, July 1932 (C. J. Sorenson), Hyrum, Provo, October 1939.
- Heterogaster behrensii (Uhl.). Blacksmith Fork Canyon, June 12, 1938 (D. E. Hardy), Logan (C.L. Neilson).
- Crophius scabrosus (Uhl.). Jordan Narrows, June 1935 (R.C. Roskelley).
- Ligyrocoris diffusus (Uhl.). Eden, August 25, 1938 (K.-D.E. Hardy), Riverton.
- L. sylvestris (Osb.) Cedar Breaks National Monument, August 3, 1938.
- Peritrechus saskatchewanensis Barb. At light, Hooper, Jordan Narrows (Roskelley), Kaysville, Logan Canyon (R.E. Nye) Spanish Fork.
- Sphragisticus nebulosus (Fall.). Logan, Smithfield.
- Emblethis vicarius Horv. On strawberry at Millville, September 13, 1938 (K.-R.L. Janes), Providence March 17, 1936 (C.F. Smith).
- Melezonotus angustatus Van D. Logan, March 17, 1936 (P.T. Rigby), Logan Canyon (R.E. Nye).
- Scolopostethus diffidens Horv. Jensen, September 3, 1937.

Family TINGILIDAE (Laporte)

- Corythucha morrilli O.-D. Leeds, Mt. Carmel, August 9, 1936 (K.-Smith), Moab.
- C. padi Drake. Cottonwood Canyon (L.L. Hansen), Granite (Allen), Spring Hollow of Logan Canyon (D.E. Hardy).
- C. hispida Uhl. Hooper, June 22, 1937 (D.E. Hardy).
- C. distincta O.-D. Green River, September 4, 1937.
- C. mollicula O.-D. Kaneshville, July 27, 1936, on Salix (K.-Allen).
- C. obliqua O.-D. Logan Canyon, August 2, 1937 (D.E. Hardy).
- Physatocheila variegata Parsh. Eden, June 21, 1937.

Family PHYMATIDAE (Laporte).

- Phymata pennsylvanica coloradensis (Mel.). Collinston, Duchesne, Farr West, Garden City, on dewberry leaf at Granite (K.-Allen), Hooper, Logan Marriott, Monarch, Myton, Neola, Richmond, Riverside, Sandy, San Rafael Swell (W.P. Nye), Teasdale.
- P. metcalfi Evans. White Rocks, September 1938.
- P. borica Evans. Blanding, Kanosh, Monticello, Zion National Park (K.-C.F. Smith), San Rafael Swell (W.P. Nye).

Family REDUVIIDAE (Latreille)

- Oncocephalus nubilus V. D. Alterra, June 19, 1935, Roosevelt, July 5, 1934.
- Triatoma protracta (Uhl.). Grouse Creek.
- Reduvius personatus (L.). Cedar City (K.-L.L. Sargent), Farmington, Granite (K.-Allen), Kaysville, Logan (K.-Hardy), Park Valley (Roskelley), Spanish Fork, Syracuse, Tooele (L.L. Hansen).
- Apiomerus crassipes (Fabr.). Eden, Farmington (E.W. Anthon), Logan (R.E. Nye), Oak Creek Canyon, July 20, 1936 (Lee Jeppsen).
- Zelus renardii Kol. Moab, August 8, 1936; sometimes kills honeybees.
- Z. socius Uhl. Card Canyon (W.P. Nye), Ford Creek Pass, Delta (W.W. Henderson), Spanish Fork (Hardy-C.B. Corbett). Feeding on the beet leafhoppers, Eutettix tenellus (Baker), at Trenton.
- Rhynocoris ventralis (Say). Brigham, Draper, May 1938.
- Archolla ampliata Stal. Myton, 1932 (C. J. Sorenson).
- Sinea diadema (Fabr.). Green Canyon (W.P. Nye) Green River, Hyrum, Jericho, Kaysville, Mantua, Minersville, Monarch, Spanish Fork (Hardy), West Weber; feeding on small lepidopterous caterpillar on alfalfa at Salt Lake City.

Family NABIDAE (Costa)

- Nabis alternata (Parsh). This damsel bug is a common, beneficial predator upon the beet leafhopper, Eutettix tenellus (Baker), upon Russian-thistle, beets, Atriplex sp.; it attacks the pea aphid, Macrosiphum pisi (Kalt.), a peas, alfalfa, clovers; it has been observed to attack Myzus persicae (Sulz.) and Macrosiphum solanifolii (Ashm.) on potatoes at Logan; to feed on Mac. ambrosiae (Th.), on Aster and Solidago; on Empoasca filamenta DeL. on potatoes; to attack diamond back moth larvae on Cheirinia repanda; it has also been observed to feed on immature false chinch bugs, small flies, small larva of oblique banded leafroller and dewberry-infesting leafhoppers. Localities include American Fork, Blanding, Bluff, Brigham, Butlerville, Copperton, Elsinore, Ephraim, Ft. Duchesne, Granite, Green River, Hinckley, Iosepa, Jensen, Kelton, Leeds, Logan, Lynndyl, Manila, Marysville, Minersville, Moab, Monarch, Ogden, Orton, (C.J. Sorenson), Panguitch, Paradise, Parowan, Paragonah, Payson, Portage, Promontory, Richmond, Salem, Salina, San Rafael Swell (W.P. Nye), Santa Clara, Stockton, Teasdale, Thompson's, Toquerville, Vernal, Virgin and Woodside.
- N. subcoleoptratus Kby. Vernal, June 28, 1937.
- N. ferus (L). Feeds on beet leafhoppers, Eutettix tenellus (Baker), in beet fields and on desert and roadside host plants; feeds on the pea aphid, leafhoppers on berry plants. Its habits are similiar to those of N. alternata, in general. Collected recently at Clinton, Delta, Ft. Duchesne, Farmington, Granite, Gunnison, Layton, Leeds, Kaysville, Mendon, Monroe, Oak Creek Canyon (L. Jeppsen), Orem, Orton, Plain City, Providence, Spanish Fork, Syracuse and Tremonton.

N. roseipennis Reut. Observed to feed on the beet leafhopper, Eutettix tenellus (Baker), on the pea aphid, the green peach aphid, upon Calaphis coloradensis Granov. on Betula in Ogden Canyon, and on aphids upon alder. Collected also at Butlerville, Benjamin, Bluff, Elsinore (H. E. Dorst), Greendale, Logan Canyon (R.E. Nye), Manila, Mapleton, Thompsons and Woodside.

Family CIMICIDAE (Latr.)

Climex lectularius L. Bedbugs are household pests and occasionally pests of poultry houses, occurring in most inhabited sections of Utah.

Family ANTHOCORIDAE (Am.-Serv.)

Anthocoris antevolens White. Adults and nymphs encountered attacking the aphids Eriosoma americanum Riley and E. lanigerum (Haus.) in rolled elm leaves at Hyrum, Logan, Provo and Salt Lake City; attacking Pemphigus populi-ramulorum Riley in poplar twig galls at Leeds; attacking P. balsamiferae Will. in leaf galls on Populus angustifolia at Brigham Canyon and Hyde Park; attacking Prociphilus fraxinifolii (Riley) in curled ash leaves at Smithfield. Also collected in Logan Canyon (R.E. Nye), Wanship (K.-G.S. Stains), and attacking Aphis ribi-gilletti K.-A. on currant at Granger.

A. melanocerus Reut. A common pest of aphids and thrips, often attacking aphids in rolled elm and ash leaves, and in galls and pseudo-galls on Populus sp., throughout Utah. Places collected include Alpine, Altonah, Farmington, Huntsville (K.-Hardy) and Logan Canyon (T. O. Thatcher).

Orius tristicolora (Wh.). A common predator upon young pea aphids and thrips in alfalfa and pea fields in Utah and present throughout the state. Also attacks other aphids, thrips, mites, and other small insects including Aphis medicaginis Koch on sweet clover and Hyalpterus arundinis (Fab.) on plum.

Family MIRIDAE (Hahn)

Miris ferrugatus Fall. Salt Lake City, June 10, 1937.

Stenodema trispinosum Reut. Altonah, July 15, 1938, Beaver, Brigham Canyon, Hayden, Logan, Logan Canyon, Monticello. (Also Geneva, Idaho, July 24, 1938 (D. L. Bischoff)).

S. virens (L.) Hyde Park (D.E. Hardy - G.S. Stains), Huntsville, Indian Canyon, June 12, 1933, Logan, Monroe, August 5, 1907 (E. G. Titus).

Megaloceroea debilis Uhl. Beaver, June 14, 1938, Logan Canyon, June 27, 1937 (K. - R.E. Nye).

Trigonotylus ruficornis (Geoff.). On sugar beets at Hyde Park and Richfield, at Amalga, Beaver, Delta (Stains), Duchesne, Ft. Duchesne, Lehi, Logan (Thatcher), Providence at light, Aug. 2, 1934 (K. - Smith), Cheirinia repanda at Snowville, Wellsville.

Teratocoris discolor Uhl. Ephraim, Duchesne, September 1937.

T. saundersi D.-S. Lewiston, June 4, 1938. (Also Preston, Idaho, July 2, 1937).

Oncerometopus nigriclavus Reut. (Jackson, Wyo. July 19, 1936).

Mimoceps gracilis Uhl. American Fork, Greenville, Huntsville, June 27, 1937, Hyde Park, Logan Canyon, Murray, Provo, Vernal.

Phytocoris lasiomerus Reut. On birch in Logan Canyon, July 31, 1933, Spanish Fork, August 2, 1938 (D.E. Hardy), Wanship, August 2, 1938 (K. - C.F. Smith).

P. laevis (Uhl.) Duchesne and Jensen, September 3, 1937, Emery.

1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It also mentions the results of the various committees and the work of the different departments.

2. The second part of the report deals with the work of the different departments and the progress of the various committees.

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- P. interspersus Uhl. Logan, September 15, 1938 (K.--W.P. Nye).
- Adelphocoris superbus (Uhl.). The superb plant bug is a common pest of alfalfa throughout Utah. Collected on sugar beets at Brigham and Fielding. Collections also include Alterra, Duchesne, Farmington (F. H. Gunnell), Ft. Duchesne (C.J. Sorenson), Hyde Park, Logan (L.Cutler), Manila, Provo, Taylorsville, Vernal, Young.
- Stenotus binotatus (Fabr.). Clinton, June 25, 1936, Farmington, Granite, June 1936 (M.W. Allen), Logan, Springville, March (Anthon).
- Irbisia brachycerus (Uhl.). Indian Canyon, June 12, 1933, Logan, May 16, 1934 (T.O. Thatcher).
- I. brachycerus solani (Heid.). On potato, Snowville.
- I. mollipes Van D. On grass, Provo Canyon, June 6, 1933.
- I. arcuata Van D. Indian Canyon, June 12, 1933, Kaneshville, July 3, 1937, Parley's Canyon, May 2, 1909 (E.G. Titus).
- I. nigripes Knight. Brigham, June 17, 1933.
- Thyrillus pacificus (Uhl.). Blacksmith Fork Canyon, Cache Junction (K. -- W.P. Nye), Farmington (Anthon), Iosepa, Logan, Petersboro, Taylor (K.--Hardy), Trenton, Salt Lake City, May 3, 1929 (H.J. Pack).
- Polymerus diffusus (Uhl.). Circleville, June 23, 1933, Marysville, Manderfield.
- P. venaticus (Uhl.). Eden, July 23, 1937, Farmington (K.-Hardy), West Weber, Parley's Canyon (R.E. Nye).
- P. flaviloris Knight. Panguitch, June 27, 1927.
- P. rubroornatus Knight. Buttlerville, June 16, 1937. (Also Pingree Park, Colorado, August 19, 1936. (C.J. Sorenson).
- Lygidae annexus Knight. Logan, July 25, 1938.
- Lygus sallei Stal. Wilson's Mesa, Grand County, July 28, 1938.
- L. near convexicollis Reut. Card Canyon of Logan Canyon, August 19, 1938 (W.P. Nye).
- L. pratensis (L.). Logan Canyon, September 9, 1934 (T.O. Thatcher). Less common in Utah than several closely related species.
- L. pratensis oblineatus (Say). Logan Canyon, September 11, 1937, Logan Dry Canyon (K.--R.E. Nye), Miner's Basin of LaSal Mountains, September 3, 1938, Mountain Home, Ogden (K.-Stains), Young (Stains), Wellsville (C.J. Sorenson).
- L. elisus Van D. Damages alfalfa, beets, and potatoes, and occurs upon various other crops and weeds. Found on sugar beets at Bear River City, Brigham, Delta, Elsinore, Lewiston, Ogden; damaging potato foliage at Flowell, Meadow, Smithfield; on Atriplex rosea at Corinne; on Salsola pestifer at Ft. Duchesne, Grantsville and Petersboro; on currant leaves at Lakeview and gooseberry at Laketown; on raspberry in Miner's Basin of the La Sal Mountains; on beans at Logan.
- L. elisus hesperus Knight. Attacks alfalfa, beets, potatoes, other crops, as well as weeds in many Utah localities. Providence, Washington.
- L. robustus (Uhl.). Logan Canyon, May 1933 (K.-E.W. Anthon).
- L. compestria (L.). Providence, July 7, 1938.
- L. rubicundus (Fall.). Farmington (F.H. Gunnell), Logan, Monticello, May 20, 1938, Willard (G.S. Stains).
- Eustictus pusillus (Uhl.). Granite, July 22, 1936 (M.W. Allen).
- Deraeocoris nebulosus (Uhl.). Logan on Virginia creeper feeding on the leafhopper Erythroneura ziczac, September 5, 1933, Blacksmith Fork Canyon.
- D. schwarzii (Uhl.). Marysville, Skull Valley, September.
- D. brevis (Uhl.). Feeding on two species of birch aphids in Logan Canyon, August 3, 1933; feeding on Virginia creeper leafhopper, Erythroneura ziczac at Logan, September 5, 1933; on English privot at Pleasant Grove (L.L. Hansen), on beans at Logan; also collected at Farmington (Gunnell), Helper, Huntsville, Logan Canyon (Thatcher), Moab, Monroe, Orem, Providence (C.F. Smith), Soldier Summit, Strawberry (Anthon), Tooele.

- D. brevis piceatus Knight. Feeding on birch aphids in Logan Canyon, July 31, 1933, at Currant Creek, April 1933, Fruitland, Glendale, Logan, Soldier Summit, Salt Lake City (H.B. Stafford).
- D. bakeri Knight. Escalante and Shingle Creek, September 1938.
- Lepidopsallus rubidus (Uhl.). On Salix at Logan, August 1933, beets at Monroe, August 5, 1906 (E.G. Titus).
- Orectoderus arcuatus Knight. (St. Anthony, Idaho, June 13, 1936).
- O. obliquus Uhl. On Norta altissima at Blue Creek, June 24, 1932.
- Coquillettia insignis Uhl. Cache Junction, Clover, June 27, 1932, (K.-M.J. Janes), Cove (K.-W.P. Nye), Ft. Duchesne (F.K. Stoffers), Johnson, Logan, Randolph (K.-Hardy), Soldier.
- Dicyphus agilis (Uhl.). Card Canyon, August 19, 1938 (W.P. Nye), Spring Lake, June 24, 1933.
- Labops hesperius Uhl. Strawberry Reservoir, August 10, 1933 (Anthon).
- L. hirtus Knight. Eden, June 21, 1937 (D.E. Hardy), Huntsville, Lewiston, Logan Canyon (Thatcher), Smithfield. (Also Franklin and Preston, Idaho, July 2, 1937).
- Strongylocoris stygicus (Say). Eden, February 23, 1937, Kaneshville, June (D.E. Hardy), Paradise (K.- Hardy - Stains).
- S. atratus (Uhl.). Logan, July 12, 1906 (Titus).
- S. croceipes (Uhl.). Ft. Duchesne, June 1932 (L. Cutler), Holden, Kanosh on Chrysothamnus, July 8, 1932, Marysville.
- S. robustus (Uhl.). Kamas, July 19, 1932, Lindon, Logan. (Also Alpine and Smart, Wyoming, Knowlton).
- Pilophorus clavatus (?) (L). Castledale, August 26, 1935, on Chrysothamnus parryi at Emery, Elmo.
- P. vanduzeei Knight. Logan Canyon, August 24, 1934 (Thatcher).
- Ceratocapsus fuscicornis Knight. Logan, July 18, 1938 (K.-W.P. Nye), Logan Canyon (D.E. Hardy - A.T. Hardy), Washington, June 26, 1933. (On potatoes, Riverdale, Idaho, July 1933).
- C. tricolor Knight. Spanish Fork, June 18, 1936.
- C. nr. pumilus (Uhl.). Salt Lake City, August 27, 1906 (Titus).
- Lopidea media (Say). Morgan, August 5, 1937, (K.-Smith), Peterson, June 19, 1932 (K.-M.J. Janes).
- L. teton Knight. Monticello, June 18, 1933.
- L. ute Knight. Card Canyon of Logan Canyon, July 24, 1938 (K.-W.P. Nye).
- Hadronema militaris Uhl. Huntsville, June 12, 1937, Lynndyl, June 24, 1929.
- H. princeps Uhl. Logan Canyon, July 29, 1937 (T.O. Thatcher) and June 20, 1937 (W.P. Nye). (Also Jackson, Wyoming, July 1936, K.).
- H. picta Uhl. Delle on Salsola pestifer, Delta, June 20, 1930.
- Orthotylus viridicatus Uhl. College Ward, August 16, 1934 (K.-C.F. Smith).
- O. coagulatus (Uhl.). Providence, at light, August 1934 (C.F. Smith), Summit, June 1933. (Also Riverdale, Idaho, Smith).
- O. flavosparsus (Sahlbg.). Logan, June 27, 1907 (E.G. Titus).
- O. fraternus Van D. Stansbury Island, May 1, 1933.
- O. formosus Van D. Logan Canyon, May 31, 1934 (T.O. Thatcher).
- O. dorsalis (Prov.). Logan Canyon, June 20, 1934 (Thatcher).
- O. angulatus (Uhl.). Panguitch, Provo, June 29, 1929 (Pack).
- O. repertus Uhl. Butlerville, June 21, 1936, Granite (Allen), Joseph (E.G. Titus), Sardine Canyon of Cache County, June 26, 1936.
- Lobopidea simplex (Uhl.). Logan, June 25, 1936 (Nye), Wilson's Mesa and Miner's Basin of La Sal Mountains, July 28, 1938.
- L. sericata (Uhl.). Logan Canyon, May 1934 (Thatcher).
- Psallus pilosulus (Uhl.). Logan, September 10, 1934 (K.-Smith), Logan Canyon (Thatcher), Monte Cristo.
- Gerhardiella rubida Popp. American Fork (H.F. Thornley), Logan, July, Pleasant Grove, June 20, 1939 (L.L. Hansen).
- Plagiognathus moerens Reut. Brigham Canyon, June 25, 1931 (K.-W.L. Thomas).

- P. obscurus Uhl. Blacksmith Fork Canyon, June 12, 1938 (D.E. Hardy), Logan Canyon, July 10, 1933.
- P. obscurus fraternus Uhl. Springville, July 11, 1933 (E.W. Anthon).
- P. diversus (?) Van D. On birch, Logan, July 13, 1933.
- Phyllopidea picta (Uhl.). Benson (K.-Stains), Corinne, Indian Canyon, Logan Canyon (Thatcher), on beets at Snowville, June 12, 1927.
- Atomoselis modestus (Van D.). On beets at Elsinore, Lehi, Logan, on Sophia sophia at Snowville, on Atriplex at Corinne, also taken at Bear River City, Curlew, Ogden, Salt Lake City, Wanship and Yost.
- Europiella decolor (Uhl.). Providence, August 1934 (C.F. Smith), Strawberry, 1933 (Anthon), Logan Canyon (Thatcher), Salt Lake City.
- Noctuocoris fumidus (Uhl.). Logan, July (K.-Hardy).
- Chlamydatus obliquus (Uhl.). Blue Creek, June 24, 1932 on Norta altissima, Ft. Duchesne, June 1932 (F.K. Stoffers).
- C. bakeri Bergr. Ephraim, Kelton, September 1929, Panguitch June 1927, Strawberry Valley (Anthon).
- C. associatus (Uhl.). On sugar beets at Bear River City, Garland, Lehi, Lewiston, Logan, Provo, Riverside and Trenton; Sophia sophia and Salsola pestifer at Snowville. Also taken at Clive (K.-M.J. Janes), Delta (L.F. Clarke) Elsinore, Fairview, Ft. Duchesne (Stoffers), Monroe, Newton, Stansbury Island, Thatcher.
- Campylomma verbasci (Mey.). Blanding, June 19, 1933, Fountain Green, on apple at Logan, Providence (Smith), Spring City, Salt Lake City.
- Maurodactylus angulatus Uhl. Soldier, August 13, 1906 (Titus).

Family SALLIDAE (Am. and Serv.)

- Pentacora signoreti (Guer.). Utah Hot Springs, August 10, 1938.
- Saldula explanata (Uhl.). Frisco, September 16, 1938, Logan Canyon (Thatcher), Milford, Myton, Pinevale, White Pine Lake of Logan Canyon, September 5, 1937 (R.E. Nye).
- S. interstitiatis (Say). Corinne, July 29, 1937, Logan Canyon (K.-C.F. Smith), Trenton, June 27, 1936.
- S. pallipes (Fabr.). Brigham, June (K.-Hardy-Stains).
- Micracanthia pusilla Van D. Logan Canyon, May 16, 1934 (T. O. Thatcher).
- Ioscytus politus (Uhl.). Midvale, September 1938 (K.-L.L. Hansen).

Family CORIXIDAE Leach

- Callicorixa vulverata (Uhl.). Hyde Park, June 6, 1930. (Det. Dr. H. B. Hungerford).
- Arctocorixa laevigata (Uhl.). Grantsville, April 12, 1930, Lehi, Locomotive Springs, Logan, Pleasant Grove, Providence (D.M. Hammond).



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